TRANSCRIPT OF PROCEEDINGS
ENVIRONMENTAL
PROTECTION AGENCY

May 20, 1974

MONS 203222

Transcript of Proceedings

Arlington, Virginia

Monday, May 20, 1974

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UNITED STATES OF AMERICA

ENVIRONMENTAL PROTECTION AGENCY

In the matter of:	:	FWPCA (307)
TOXIC POLLUTANT EFFLUENT STANDARDS	:	Docket No. 1

EPA Conference Room,
Room 1112,
Building #2, Crystal Mall,
Arlington, Virginia.

Monday, May 20, 1974.

Hearing in the above-entitled matter was reconvened pursuant to adjournment, at 9:00 a.m.

BEFORE:

WILLIAM J. SWEENEY, Administrative Law Judge.

APPEARANCES:

(As heretofore noted.)

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PROCEEDINGS

JUDGE SWEENEY: We'll be on the record.

Who will be your first witness?

MR. ECKERT: Dr. Thomas W. Duke.

MR. RICHEL: Your Honor, if I may, may we have the right to call another witness first? Do we have any choice in that matter?

JUDGE SWEENEY: They don't, unfortunately, have the affidavits of anyone else but Dr. Duke available at this moment.

MR. RICHEL: Nonetheless, I do recall at one point in the past that EPA had some discretion to call those witnesses which it wanted to talk to in the order they wished to have, and I think it might be appropriate if we were allowed similar discretion since all parties are present, to the extent that--

JUDGE SWEENEY: We'd have to take a recess to do that.

MR. RICHEL: Why is that?

JUDGE SWEENEY: I say they don't have the affidavit of anybody else available here. They are being xeroxed and it will be later today before they are available.

MR. RICHEL: The affidavit or the exhibits?

MR. ECKERT: Well, in order to put the witness on the stand we're going to need to give Judge Sweeney both

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the affidavit and the exhibits, unless you plan to cross-examine only on the affidavit and have no questions on the exhibits.

MR. RICHEL: I have certain cross-examination that I'd like to pursue now that can be done in the absence of exhibits.

MR. ECKERT: I'll leave that up to Judge Sweeney, if he wants to allow that.

JUDGE SWEENEY: Well, I think it is up to Mr. Eckert who he wants to call. He's the one who is calling the witnesses. If you want to call Dr. Duke, why--

MR. ECKERT: Your Honor, I think it would be far better to get the witness on the stand where we have the exhibits in hand.

JUDGE SWEENEY: All right.

MR. PARK: Your Honor, could we ask, when do we expect the exhibits?

MR. ECKERT: I hope later this morning, as quickly as we can get them.

MR. RICHEL: On what basis do you believe that we should be required to cross-examine on exhibits that you belatedly give to us on the day of the hearing?

MR. ECKERT: The question is not having given the affidavits to you--

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MR. RICHEL: That's one of the subjects that I

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wanted to discuss with Dr. Veith.

MR. ECKERT: Which exhibits haven't you received?

MR. RICHEL: I've received no documents from Dr. Veith. I received none in the mail. On May 8th I came and requested that I be given copies of those documents, and they were not provided to all, and I did not receive a copy of any of those documents.

On May 9th, I requested receipt of those documents and I was told by you that they would promptly be placed in the mail. To date I have received nothing, and it is on the basis of that failure to receive information, your Honor, that I have been unable to critically review Dr. Veith's testimony. My technical colleagues at General Electric have been unable to critically review, in the absence of these exhibits or even reference to the titles. And it is on the basis of our inability to go forward now that I move that his testimony be stricken in total.

I should not be asked to receive documents here today, review them in the absence of technical assistance, and provide cross-examination. We were required to provide our information by a certain date. I'm afraid that consistent treatment has not been required of EPA.

So even though the fact that the exhibits are not here now is very much the point, and it is on that basis that I move to strike Dr. Veith's testimony.

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MR. PARK: Your Honor, we would join in that motion on the basis of--

JUDGE SWEENEY: In order to strike something, it has to be in the record; right? Is that right? How can I strike something that isn't in the record.

MR. PARK. The motion should be modified to move that it should not be admitted into the record on the basis of not being timely--

MR. ECKERT: I'm sure this material was mailed out some time ago, certainly no later than the 9th. Has no one here from industry received the affidavit and the exhibits from Dr. Veith?

Monsanto has received them?

MR. PARK: We received some but we're lacking a number.

MR. ECKERT: Is the number of exhibits you never received published or unpublished data?

MR. PARK: Both.

MR. ECKERT: Well, now, we could move to strike specific exhibits and the testimony relating thereto where you didn't receive it. I think we could entertain a motion of that type, but we tried to send out all of the unpublished data and the exhibits to each of the Objectors.

Mr. Richel, I think you are unique in that you have never received anything. I can only attribute it to the

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mails because I am almost sure I checked with my secretary and--

MR. RICHEL: Well, I will say this, your Honor. Good faith is a nice virtue, but that's not good enough. We have been put to many damn inconveniences in this proceeding. We have had dates changed behind our backs. We've been forced to proceed with cross-examination when we were assured that it would be one week later.

And now I'm being asked to receive material some time today and be prepared to cross-examine in a day or two days on that material.

I say it's unfair. I say I shouldn't be put through that burden. And I say that good-faith effort is insufficient, and that this testimony is essentially unsupported and that it should be stricken.

JUDGE SWEENEY: I can't strike something that is not of record. Don't you understand?

MR. PARK: Your Honor, let me correct the record on what we received. We have received only the few exhibits that were passed out on -- I guess it was May 8th or 9th, and nothing since that.

In searching through the literature ourselves we did gather up a few more of the items referenced in his testimony or his affidavit, but we have not received anything other than that passed out at the last hearing.

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I would move that--

JUDGE SWEENEY: You are all talking to me in a void. I don't have any of this. I don't know what you're talking about. Now let's proceed with Dr. Duke. At least we have his affidavit here, and we'll take up your problems when we get to them.

MR. PARK: Could I just simply move that Dr. Veith's affidavit with exhibits not be admitted on the basis that it was at the EPA request that the schedule was moved up--

JUDGE SWEENEY: When we get to it, you can make any motion you want, when we get to Dr. Veith. Right now we're with Dr. Duke.

MR. PARK: Dr. Duke hasn't been called yet.

JUDGE SWEENEY: Dr. Duke, will you take the stand?

Whereupon,

THOMAS W. DUKE

was called as a witness and, having been first duly sworn, was examined and testified as follows:

MR. ECKERT: Your Honor, I think I should very briefly lay a foundation for the record.

JUDGE SWEENEY: The written statement of Dr. Duke will be identified as Exhibit 102.

(The document referred to was marked Exhibit 102 for identification.)

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DIRECT EXAMINATION

BY MR. ECKERT:

Q Dr. Duke, do you have any corrections to make to the exhibit entitled "Exhibit 102"?

A Yes, I do.

Q Will you please read those for the record?

A The first is on page 10, the last line of the first paragraph. "Where waters in Escambia Bay show only trace levels (.3)" should read "(.03)."

On page 11, the next to the last line in the first paragraph. "That these mollusks would reach the less than 0.03 micrograms per liter" should read "0.03 micrograms per gram."

On page 14, the second sentence of the first paragraph. "Over that of unexposed controls by 10 micrograms per liter of Aroclor 1254 (Exhibit 11)" should be "(Exhibit 1)."

Q Do you have any further corrections?

A Yes.

On the same page, the second paragraph, the first sentence reads "Exhibit 2." It should be "Exhibit 11."

Next is page 18. The next to the last line of the second paragraph where it says "(Exhibit 17)" it should read "(Exhibit 23)."

The last is on page 19, the last paragraph. The

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first sentence should be "five micrograms per liter of Aroclor 1254."

MR. ECKERT: Your Honor, the record should show that the exhibits which are being offered in evidence are numbers 2, 4, 6, 7, 10, 12, 16, 17, 19, 20, 22, 24, 27, 28, 30, 31, and 32.

The others, although referred to in the testimony, will be treated as references only.

BY MR. ECKERT:

Q With the changes you have made, Dr. Duke, is your testimony true and correct?

A Yes, it is.

JUDGE SWEENEY: Off the record.

(Discussion off the record.)

JUDGE SWEENEY: On the record.

MR. PARK: Your Honor, I move that the following exhibits not be admitted into evidence because they have not been sent to us for review prior to this proceeding, so that we could examine Dr. Duke on them, and have not been made available to us:

Exhibits No. 2, 6, 19, 22, 24, 28, and 30.

MR. ECKERT: These weren't provided to you on the day that we cross-examined your witnesses?

MR. PARK: That's correct. In fact, Mr. Eckert, others were not provided to us and we went out and found

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some others that I am not asking be stricken. The ones that I mentioned are those that we have not been able to lay our hands on, even through our own efforts.

MR. ECKERT: I'm afraid what we have here is a breakdown in the mails but I'm quite certain these materials were mailed out.

JUDGE SWEENEY: Were they sent out certified mail?

MR. ECKERT: No, they weren't. That's the difficulty.

MR. PARK: We appreciate you've been working under a very heavy burden but still we feel that we simply do don't have the basis for any cross-examination since we don't have parts of the affidavit.

MR. ECKERT: Your Honor, I don't have a response to make. If they haven't gotten the exhibits I don't see how they can cross-examine on them.

JUDGE SWEENEY: Well, you seem to be confused as to whether they were mailed or whether they were handed out a week ago when the parties were here with their own witnesses.

MR. ECKERT: I know that some of them were handed out at that time. Now what I'm afraid happened is that some people who are not parties objecting to PCB's walked off with the affidavits for PCB's. I'll just have to get our sign-up sheets and find out who got what.

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JUDGE SWEENEY: Well, you agree then with the motion, that it should be granted as to the exhibits specified at this time?

MR. ECKERT: I don't have a response to make. As I say, I don't know just who got what. I can't question the veracity of Mr. Park here because I don't have anything to say that he did get the material.

JUDGE SWEENEY: All right, the exhibits will not be received. That's the attached exhibits to Exhibit 102 of Dr. Duke, namely No. 2, 6, 19, 22, 24, 28, and 30.

Dr. Duke is available for cross-examination; is that correct?

MR. ECKERT: That's correct.

CROSS-EXAMINATION

BY MR. RICHEL:

Q Dr. Duke, I have a few background questions, and that's pretty much it. And frankly, I'm trying to establish the relevance or lack of relevance of your testimony to this proceeding at this point in time. I can't prepare you any better than that.

The standards proposed for the discharge of PCB's into marine waters are different from those proposed for discharge into estuarine and fresh waters. Is that correct?

A Are you saying there's a difference between marine, estuarine, and fresh water?

ebll

Q Well, let me start off this way.

Has one standard been proposed for the discharge of PCB's into all waters?

A Not to my knowledge, no.

Q Have you reviewed the proposed standards?

A Yes, I have.

Q And as I read them, I understand that there are certain standards proposed for discharges of PCB's into marine waters.

A As opposed to fresh waters?

Q As opposed to fresh waters.

A Yes.

Q I take it these differences reflect a difference in the impact that PCB's will have on each type of environment.

A I did not formulate the standards. I can only say that that's possible.

Q Okay. I understand that response. You didn't, as I take it, have anything to do with the formulation of the proposed standards. Is that correct?

A Except that data from our laboratory were used.

Q Can you point to the direct use of that data in the establishment of the standard? Can you point to any part of one of the proposed standards and show the particular use of data from your laboratory?

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A It is my understanding that the background information for the standards were taken from the National Academy of Science document, --

Q Right.

A -- which we contributed data to.

Q I see.

A So therefore I assumed that our data was used in such a standard.

Q I see. Okay.

So in that sense it would be reflected in the NAS document and therefore considered by EPA in proposing its standards?

A That is my understanding, yes.

Q And I guess your testimony here today summarizes much of thedata that was heretofore presented to NAS?

A It may do that, sir. It is in response to questions and so forth that the Objectors raised. It may also do what you say.

Q I see. Well, we'll get to that in a moment.

You testified, I take it, as to the presence of PCB's in Escambia Bay and as to the impact of PCB's on marine organisms.

A That's correct.

Q That's taken from your testimony.

A That's correct.

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Q Escambia Bay is an estuarine environment?

A Yes, it is.

Q And most of the aquatic organisms-- Strike that.

Most of the organisms cited in your testimony I take it are marine organisms?

A I would classify them as estuarine, yes, sir.

Q And estuarine is to be distinguished from fresh water?

A Yes.

Q Can you give me the basic distinction in the nature of each?

A An estuary is a semi-inclosed body of water that receives fresh water runoff from a river or stream or basin and also receives water from the ocean, and the boundaries-- Certainly you have salt water on the one side and fresh water on the other, and the animals that inhabit this area and can in fact move a little bit in each direction are known as estuarine animals.

Q I take it there's a certain affinity to salinity on the part of these estuarine organisms?

A Will you tell me what you mean by "affinity"?

Q I started to like the phrase.

(Laughter.)

Is there a certain biological need for saline content in their environment?

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A Yes, for many of these animals, that's certainly true.

Q I take it you have reviewed the testimony of the Objectors. That's what you were trying to tell me before.

A Yes, I have.

Q And I take it it is your position that you're responding to these Objectors.

A That's the purpose of my testimony, yes.

Q I'm sure.

Have you read the cross-examination of these witnesses, of our industrial witnesses on PCB's?

A No, I haven't.

Q Well, from your reading of the testimony, did you realize that no manufacturing facility of General Electric, Westinghouse, or Monsanto that is subject to the proposed standard discharges into anything but fresh water?

A I realized that, and I wondered about that. You see, even though our company does not discharge directly into salt water, Escambia Bay is a good example of often what enters fresh water ends up in salt water.

Q Did any of the Objectors object to the proposed marine standard?

A Yes.

Q Who? Any of the industrial Objectors to the PCB's?

A Yes.

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Q Who?

A I remember in particular some objections to the standards in general which I take it includes the estuarine and marine standards by Mr. Papageorge in particular.

Q But recognizing that his plants would not be affected by any other than the proposed fresh water standard. I think you could agree with me that any concern he might have would be academic.

A In my view of it, sir, I disagree. I think that he would be concerned that the material from his plants could reach salt water so his comments would be directed to both fresh water and salt water.

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Q Let me understand one thing here. Are you taking the position that he who discharges to fresh water is subject to marine standards?

MR. ECKERT: Objection. You're asking the witness for a legal conclusion with respect to the application of these standards.

MR. RICHEL: It seems like an important point.

BY MR. RICHEL:

Q Is it your impression that all dischargers into fresh water should be subject to a marine standard because the particles of their discharge may eventually get into marine waters, quite apart from your understanding of the law?

A Apart from my understanding of the law, I see that

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materials such as those that came from the Monsanto plant in Pensacola that border on this area where, in fact, they're on a fresh water stream, their effluent enters a fresh water stream, but they're close enough to be influenced by the estuarine environment and this material gets into the salt water environment.

I don't know the legal aspects of the standards but this is my understanding.

Q Did any Objector question the levels of Aroclor 1254 in Escambia Bay?

A To my knowledge they did not directly question it but there were questions that were indirect in this way.

For example, there was the question about if PCB were on particulate matter would it be environmentally active. This to me questions the Aroclore 1254 in Escambia Bay which was environmentally active.

Q Did you consider the-- Did EPA consider the question of adsorption onto particles in preparation of the proposed standard?

A The study that we made on Escambia Day was available and in the Academy document; as to the extent it was considered, I cannot answer that.

Q To what particular contentions do you feel your testimony responds? To what particular and specific contentions raised by the Objectors do you feel your testimony

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responds?

A I have several. Would you like for me to make some specific comments?

Q Let's go one at a time. I was sure you would, but let's go over them one at a time.

A Certainly.

The National Electrical Manufacturers Association letter of January 18 --

Q One second. Excuse me.

Are they a party to this proceeding?

MR. ECKERT: They are. They filed an objection, as I understand it. That makes them a party.

JUDGE SWEENEY: Yes, they're a party, but where is their statement?

MR. ECKERT: They made allegations in their objection of January 18th to which Dr. Duke is in part responding.

MR. RICHEL: Must the testimony to which EPA responds be submitted by he who is made available for cross-examination or he who publicly gave his testimony?

MR. ECKERT: It seems to me, your Honor, that this material is in the record, it stands alone, and that we're entitled to rebut it.

JUDGE SWEENEY: It's not in any record I've seen, Mr. Eckert. I don't know why you say it is in the record.

MR. ECKERT: Aren't the objections filed by the

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Objectors on January 18th part of the record?

JUDGE SWEENEY: They have not been received in evidence at this hearing. I don't see why EPA has to worry about an Objector who doesn't appear at the hearing to present evidence.

MR. ECKERT: Well, it seems to me that such a person is at least a party to the extent that he has preserved his rights by filing an objection, that he has served notice that he is going to challonge us on certain points.

And it seems to me that we're entitled to shore up our case on these points.

MR. WILLS: Your Honor, if I may interject a point, it has been the position of EPA that their testimony is merely rebuttal to what industry or what the Objectors have presented and according to your order, all testimony to which they were supposed to be rebutting was to be submitted by March 15th, and apparently this group did not submit any testimony by March 15th, so therefore, there is no evidence before the hearing to be rebutted.

JUDGE SWEENEY: I don't consider anything said in any of the objections as evidence in this hearing, Mr. Eckert.

MR. ECKERT: Very well.

JUDGE SWEENEY: None of it was sworn to.

BY MR. RICHEL:

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Q Number two?

A Yes. In Monsanto's objection on page 2, Item 5--

JUDGE SWEENEY: Again you're talking about an objection?

THE WITNESS: This is an affidavit.

JUDGE SWEENEY: Of Mr. Papageorge?

THE WITNESS: Yes.

JUDGE SWEENEY: I see.

THE WITNESS: On page 2, Item 5, it states:

"Fundamental scientifically-based data is lacking."

BY MR. RICHEL:

Q And I guess some of your testimony and your citations attempt to shore up what were alleged to be lacks?

A I hope that this scientific data that we are presenting would rebut this statement.

Q In most part, was not this material available six or eight months ago, or a year ago?

A What material are you speaking of, sir?

Q The material you're citing as shoring up the lack.

There has been an allegation, I take it, that fundamental scientifically-based data is lacking. Now you have told me you're attempting to respond to that with the information contained in your document, your affidavit.

A Yes.

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Q I'm asking you whether or not the information contained in your affidavit was not available six months ago, a year ago, two years ago?

A Certainly some of it was, yes.

Q Did you present that to EPA?

A Pardon me?

Q Was that information that was heretofore available presented to EPA for whatever use it might make in Washington?

A Yes.

Q Can you identify that data that was heretofore presented to EPA in Washington?

A I don't understand exactly what you mean, "presented." In our laboratory when we develop scientific data and we put it in quarterly reports and in scientific reports to journals and so forth, this becomes part of the scientific data base.

Q I see.

A We supply this information to the scientific community and it is therefore available to EPA also.

Q And has that been the case with all the information contained herein?

A Not all of the information. Some of this information was developed after the standards were set.

Q Identify that information which was created or

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amassed after the proposed standards were set, please.

A To the best of my knowledge, without taking quite a bit of time looking at it, I think it has really been identified already as being those documents that were in press.

Q And where is that identification made?

A It's made in my affidavit:

"The following exhibits are included in my testimony --"

and where we have "in press" or something of this order, then that information -- and I say "probably" -- was not available at the time the standards were written.

Q All right. I'd like to look at this just for a moment.

I take it that's-- Well, is that information that was in press represented by the information that was stricken by Judge Sweeney a while ago? Are they equivalent?

A I believe that that's the case, yes.

MR. RICHEL: Your Honor, I move to strike those exhibits presented by Dr. Duke which were not in press at the time the proposed standard was proposed on the following ground:

The material was available to EPA, according to Dr. Duke's admission, at the time of EPA's preparation of the proposed standard. It may have been used in EPA's

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decision-making process and to raise it now is to, in a sense, either duplicate material that was already used in EPA's decision-making process or raise new material, and to the extent it raises new material, we should be allowed the opportunity to present direct testimony in opposition thereto. And as I understand it, that time is not available.

Therefore, it is improper rebuttal and should be stricken.

MR. ECKERT: Your Honor, I would submit that the question of whether or not data was available before or after the standards were proposed is not relevant to the question of whether or not it's rebuttal.

Now I think if Mr. Richel wished to make a motion to strike on the grounds that it wasn't rebuttal, then that seems to be consistent with what has been going on here during the last week, but the availability of information before or after the proposal of the standards doesn't have any bearing on that question.

JUDGE SWEENEY: Well, I understood that was what he was basing his motion on, the fact that it is not rebuttal and that they would not have a chance, it being new material they would not have a chance on their part to rebut it.

MR. ECKERT: I thought he was alleging that the mere fact that the information was available prior to the publication of the proposed standards made it non-rebuttal/

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and it seems to me that this information is rebuttal, that we can show that the Objectors challenged us on toxicity; they said that toxicity is terribly variable. We have shown that it isn't.

They have said that our bioconcentration factor was way out of line. We've shown that it is not only not out of line but typical.

These things are genuine rebuttal.

Mr. Richel's motion is far too broad, it seems to me, to even deal with it unless we get down to specifics.

MR. RICHEL: Well, your Honor,--

JUDGE SWEENEY: Do you want to be more specific? I thought you were specific.

MR. RICHEL: Well, may I have a ruling therefore on the motion?

JUDGE SWEENEY: Yes. I believe Mr. Richel -- and he can correct me if I'm wrong -- is objecting to the exhibits on the grounds that they are not proper rebuttal to any affidavits or any testimony by industry witnesses.

Is that correct, Mr.Richel?

MR. RICHEL: Yes, sir, in part; yes.

JUDGE SWEENEY: In part. Right.

MR. ECKERT: Well, Dr. Duke had a question which he was in the process of answering, going through his affidavit and identifying which portions of it were-- Now

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he just happened to start out with rebuttal to an Objector, but that's not the only material that his testimony rebuts. There's a great deal of it and perhaps when Dr. Duke finishes his response to Mr. Richel's original question, this matter will be clarified.

JUDGE SWEENEY: So far he has not pointed to anything--

You may continue, Dr. Duke.

THE WITNESS: I would like to refer then to the General Electric affidavit, Mr. Lauer's testimony, Dr. Lauer.

My pages are not numbered but in his testimony under Section B:

"Most of the existing bicconcentration data are based on exposures of confined organisms in laboratories or concentrations in water formulated by the use of solvents. Neither the data base nor level of understanding of the combined influence of these variables under natural conditions are sufficient to permit accurate prediction of concentration factors."

BY MR. RICHEL:

Q Which specific portions of your testimony relate to that point?

A The testimony on bioaccumulations in the laboratory studies and those studies in the second part of my testimony

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on toxicity and bioaccumulation relate to this, as well as the Escambia Bay study, because concentration factors can be determined from the Escambia Bay study.

Q The impact-- I think we can agree the impact of Dr. Lauer's statement that you cited refers to the effect of the use of solvents. It is no broad ranging question about or statement about determination of bioaccumulation factors. It is restricted, it seems to me, to the impact of solvents on the determination of bioaccumulation factors.

Now if you can point specifically in your testimony to a response to that point I will concede that it is relevant.

MR. ECKERT: Isn't your question a bit argumentative, or your point a bit argumentative? It seems to me that Dr. Lauer's point does not refer solely to solvents. He's talking about two factors, the confinement of organisms in laboratories and the use of solvents.

It seems to me that Dr. Duke's environmental data have nothing to do with confined organisms in laboratories or water formulated by the use of solvents. They refute that the bioconcentration data are based on these types of studies.

MR. RICHEL: Okay.

BY MR. RICHEL:

Q Are these studies that you present to show

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bioconcentration data based on exposures of unconfined organisms? I take it you present certain data concerning bioconcentration rates in organisms not confined. Is that correct? Is that the point which you are rebutting?

A Yes.

Excuse me. Let me give my feeling.

The question has to be raised as to the veracity of the bioconcentration factors. In our Escambia Bay study, for example, we are able to figure out with the data we present in our affidavit -- to figure concentration factors that in fact are field concentration factors and do not involve solvents except those that might be found in the natural environment.

Therefore, I rebut that statement with this testimony.

MR. RICHEL: I would like to raise one final point with the Hearing Officer before I relinquish the podium.

Your Honor, I would move to strike Dr. Duke's testimony on two grounds. The first:

It relates, as I see it, to a discussion of marine and estuarine matters, not to a discussion of impact on fresh water environments.Since no manufacturing facility of General Electric, Westinghouse, or Monsanto which is subject to the proposed standard, discharges into anything but a fresh water environment, I suggest that the testimony

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is simply not responsive.

Second of all, even if you were to determine a certain relevance of Dr. Duke's testimony, I suggest that the relevance would be tied to the issue of the relationship of marine and estuarine data to a fresh water context, and I am saying that this relationship was not clearly addressed by the Objectors. This relationship need not have been. We saw no reason to, and we would need additional time to address this relationship in direct testimony of our own.

So what I'm saying is even if it is relevant and I submit that it is not, even if it is relevant then it raises an issue which would require additional time and therefore, I submit that it's improper rebuttal.

MR. ECKERT: Your Honor, if I might briefly respond?

First of all, as to the first point, the Objectors have discussed the entire PCB standard, not simply the PCB standard relating to fresh water. And the relationship of marine and estuarine to fresh water data is, as I understand it, not what is in question here but rather, whether EPA's data supported its proposed marine standard.

And it seems to me that Dr. Duke's testimony is properly responding to the material raised by the Objectors.

MR. RICHEL: Your Honor, we simply are not affected by the marine standard, and the question on the

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marine standard is academic to us.

JUDGE SWEENEY: You don't have any objection to the marine standard as proposed?

MR. RICHEL: No, sir, nor does any other objector here since we have no manufacturing facilities that are subject to the standard and discharge into marine waters.

MR. ECKERT: I might point out, Mr. Richel, that not a single Objector made that distinction in the affidavits. Every one of them addressed his objection to the entire PCB standard. I don't recall anyone saying that the proposed marine standard is just fine with us.

JUDGE SWEENEY: Well, do they now state that for the record, Mr. Richel? You have already stated it for General Electric.

MR. RICHEL: Yes, sir. We have not addressed ourselves to it because it is not germane to us at this time.

JUDGE SWEENEY: How about Monsanto?

MR. PARK: If this would result in the granting of the motion, we would on the record agree to state that we have no objection to the marine standard.

MR. ECKERT: Your Honor, Dr. Lauer from GE presented a great deal of data on marine species and if we are not entitled to rebut that, then I don't know what we're entitled to rebut.

Mr. Richel may say that GE has no objection to

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the marine standard--

JUDGE SWEENEY: Well, if there is no objection to the standard, Mr. Eckert, why do we spend time arguing about whether it is right or wrong?

MR. ECKERT: Because I'm not sure that Mr. Richel can speak for all possible Objectors.

JUDGE SWEENEY: No, he's speaking for General Electric Company.

And I'm asking the other Objectors-- Monsanto says they have no objection.

MR. WILLS: With respect to Westinghouse, I don't believe we really have a standing to object to a marine standard since we do not discharge into that area.

MR. ECKERT: But I point out there are two parties who aren't even represented here today who might well.

MR. RICHEL: That has never been a restriction on making rulings here before.

JUDGE SWEENEY: Who are the other parties?

MR. ECKERT: The Environmental Defense Fund and the Natural Resources Defense Council.

JUDGE SWEENEY: Well, that would be their problem. If they don't want to attend the hearing we can't be responsible for them, Mr. Eckert. It is their responsibility to be here. They have not asked to be excused from the

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hearing. They entered an appearance, and if they aren't here, they have no reason to object to anything that occurs.

I don't see any point in going into this to no purpose.

MR. ECKERT: Has everyone stipulated that the proposed marine standard is acceptable?

JUDGE SWEENEY: I don't think there is any other Objector here.

Is there any other Objector here who objects to PCB's that hasn't spoken?

(No response.)

MR. RICHEL: The point should be taken that I would hate to see you use this at some opportune moment in the consideration of final standards to judge some other issue. I make it clear that we have no interest in it nor have we seriously considered it because we would not be affected by it.

I do not thereby intend to place any imprimator of adequacy upon it.

MR. PARK: In other words, what Mr. Richel stated is there are no point sources discharging into marine waters so far as we're aware.

JUDGE SWEENEY: I think now that it has been clarified, Mr. Eckert, that there is no objection to the standard you can accept it as being an acceptable standard

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and republish it.

MR. ECKERT: I think that's right.

MR. RICHEL: My point, your Honor, was in the form of a request to strike Dr. Duke's testimony since it does relate to impact of PCB's on a marine environment and since we are not affected by it, I moved to strike it as irrelevant and improper rebuttal.

JUDGE SWEENEY: Well, it is not of record to be stricken. It just will not be received, along with the other attached exhibits.



(Exhibit 102, previously marked for identification, was rejected.)

JUDGE SWEENEY: We'll take a short recess now.

(Recess.)

JUDGE SWEENEY: Back on the record.

Dr. Duke, you are excused.

(Witness excused.)

JUDGE SWEENEY: Mr. Eckert, do you have the affidavits of any other witness?

MR. ECKERT: Not at this time. I am unable to provide them to you yet. They are being xeroxed right now.

The only solution I can suggest is that we recess until after lunch and pick up again.

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MR. RICHEL: Your Honor, if I might address myself

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to that?

I need for my initial cross-examination no reference to any exhibits. I need only a reference by Dr. Veith and myself to a copy of his testimony. I would be happy to supply him with a copy for his use on the stand. I cannot conceive that a copy of that testimony is not available here today at this time.

JUDGE SWEENEY: Is there one copy for the Reporter?

MR. ECKERT: Certainly.

JUDGE SWEENEY: It would be better if you have two so there can be one for me as well.

Whereupon,

GILMAN D. VEITH

was called as a witness and, having been first duly sworn, was examined and testified as follows:

JUDGE SWEENEY: Dr. Veith has been called to the stand and he has been sworn, and his written statement will be identified as Exhibit 103.

(The document referred to was marked Exhibit 103 for identification.)

CROSS-EXAMINATION

BY MR. RICHEL:

Q I take it at the outset, Dr. Veith, that you swear to the exhibit since there was no affidavit attached

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to it initially?

A Yes, I do.

Q Now I'll be very straightforward again. I am not going to talk about much of the substance of your material. I will simply attempt to talk with you on the relevance of your material to this proceeding at this point in time, and it will be straightforward.

Who ordered you to prepare testimony for this proceeding?

A I had a letter from Dr. Thompson's office dated March 25th, --

Q Of this year?

A Of this year.

(Continuing) -- addressed to me from Dr. C. Hugh Thompson, Chief, Hazardous and Toxic Substances Branch.

JUDGE SWEENEY: Okay.

THE WITNESS: It simply says:

"Please address the specific objections --" which were enclosed --

"-- and data in your affidavit or in oral testimony."

And I assumed from that that it was left up to my discretion as an environmental scientist as to what would be addressed.

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BY MR. RICHEL:

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Q The problem I'm addressing here, incidentally, Dr. Veith, is not academic. It's a question of whether or not new material has been presented, material which we have not had a chance to respond to in our own direct testimony, and that's really all that is at issue here.

So I'm not trying to restrict academic freedom; I'm simply attempting to give us an equal shot at the material.

Now when did you start the task? March 25th was the date of the request.

A That was the enclosure of the formal affidavits of the Objectors that I received. We knew somewhere at the end of February or the first part of March that our laboratory would be -- Our director, Dr. Mount, called us in and said our laboratory might be asked to prepare affidavits on the industry's objections. At that time we were provided with the letters of objection filed around January 18th. Most of the dates are around January 18th.

So we had a list of, I would guess, in excess of 15 to 20 letters of objection. We knew approximately what the objections were before we had the affidavits.

Q Okay.

About what time did you start your task then of preparing for your testimony here?

A We started preparing the testimony I would guess the first -- approximately the second week in March to the

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third week in March. It was revised and I think the first draft was submitted I think about April 1st.

Q And the conclusion of your activities, in other words, the finished product, about when was that?

A I'm not certain that there were major changes made after April 1st, but perhaps by April 15th or thereabouts.

Q Okay.

A I don't have a date on the last draft.

Q I'm not going to hang you on it if that is approximate.

Since you started your work in about the second week of March I presume that your work was not used in preparation of the proposed standard.

A I can't respond to that.

Q Was your work used in developing the proposed standard or was it not?

A Do you mean the data that was summarized in my affidavit, or my work at the National Water Quality Lab specifically?

Q Okay. Let me come back to it. I can see your confusion and it's an unfair question -- my confusion.

I assume then that you reviewed the Objectors' testimony and the exhibits attached thereto in preparation for your own testimony?

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A Certainly.

Q And you considered review of that material essential to come up with a fair analysis of the Objectors' testimony, I take it?

A Yes.

Q And you considered it an essential part of your task-- You considered the review of our testimony and exhibits an essential part of your task, I take it?

A Well, defining what the task is may make that question also unanswerable from my point of view, and that is there was no clear task spelled out and there are quite obviously differences, from a legal point of view or a procedural point of view, and from a scientific point of view, and my task, as I assumed it to be, was to present the data that would lead to a respectable establishment of a standard either in support or refuting.

So much of the data that I summarized in my affidavit could have been summarized with or without the industry objections, --

Q Okay.

A -- but many of the points were put in specifically because the objections I thought were not true or did not summarize or give a fair appraisal of what the literature and the on-going studies showed.

Q Nevertheless you were instructed, at least in

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part by Dr. Thompson's letter, to respond to certain objections. Am I correct? Or so you read it a moment ago.

A He said please address the specific objections and data either in your affidavit or oral testimony.

So I guess that can be construed as responding.

Q Now let me come back just once again:

In preparing for your testimony which, in part, attempts to -- or in whole, attempts to address objections raised by industrial Objectors, you considered it essential to review the testimony of the Objectors and the exhibits attached thereto and referred to therein? Is that correct?

A I would not agree that it was essential. I would say it was an integral part of it.

Q And would you say that it was fair of you to do this to be able to respond intelligently to those objections?

A Well, I think the objections, particularly where I felt we had data to rebut their objections, gave a crystalizing or a focal point for the testimony.

Q Okay.

Now we're to the point where I came in a while ago where I said I have seen nothing of your exhibits. Now in order for us to fairly evaluate your testimony and to make your testimony an integral part of our cross-examination of you, should we not have had the opportunity to review your exhibits? Is there any doubt in your mind?

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A I would have to say Yes.

MR. RICHEL: Now, your Honor,--

THE WITNESS: I wonder if I could add something?

Many of these exhibits, for anyone working in the area of hazardous materials and particularly PCB's, should be well aware of these exhibits if they are to address the problem responsibly, so that I don't feel that the fact that some of these were not, -- for logistical reasons or whatever, you did not receive them, I don't --

BY MR. RICHEL:

Q If I, as an attorney, Dr. Veith, wanted to review those exhibits and simply saw a number referred to in your testimony and no reference to the title of the article or the whereabouts of the article or data, is that not a difficult situation?

A I agree it's difficult.

MR. ECKERT: I really must object to this whole line of questioning, Mr. Richel. We have cross-examined a great number of induatry witnesses who came up and said that the toxicity is 'way overatated in the EPA document without citing any evidence whatsoever. And Dr. Veith and in fact all the affidavits that we've presented here were a great deal more specific than that, and you certainly have enough to cross-examine on.

Now if you want us to stipulate that it would be a

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great deal easier for you to examine with some cited references in front of you, I think there is no question about that, but that does not take away from the expertise of our witness nor his qualification to make the statements set forth in the affidavit.

MR. RICHEL: For the moment, your Honor, I have no quarrel with the witness' expertise and that is not involved here. I have no quarrel with the fact that he may have worked long and hard to prepare the testimony. I have no quarrel with his integrity.

I do quarrel with what I consider to be a sham in an administrative proceeding when we are continually burdened by an inability to get relevant material in time to adequately prepare for the future and it is on that basis that I make the following request:--

Well, let me say this, your Honor. When I received Dr. Veith's testimony, no exhibits were appended nor were the exhibits appended, as I understand, at the time of receipt to anybody else's testimony.

When we arrived on May 8th, there were limited numbers of copies available, as I understand it. They were given to some people, not to me.

I addressed Mr. Eckert and ask for the material and said, "If you send it to me promptly, that will be fine." Of course at this point I was anticipating a May 29th hearing.

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I was later to learn that that was changed to May 20th.

Now, nothing was received in the mail and I am saying therefore that I have not had the opportunity to properly prepare for cross-examination and whether you present the testimony here today or 20 minutes from now will not allow me to prepare for cross.

I think we were abused. I think it is unfair, and I'm asking that his testimony not be taken into evidence for that reason.

MR. ECKERT: Mr. Richel, you've made the point about the exhibits to Dr. Veith's testimony and I must acknowledge on the record that your objection is well taken. However, as to the testimony itself, you've had that for some time and I don't see any reason why you can't examine on that specifically.

JUDGE SWEENEY: Dr. Veith has already answered a question that in order to evaluate his testimony, the person asking questions should have the exhibits available, unless I misunderstood his reply.

THE WITNESS: May I speak?

JUDGE SWEENEY: Yes.

THE WITNESS: I think in rebuting or reading or evaluating a number of the industry objections, they were just flat-out statements with no substantiation, and there is no way you can rebut data without the data.

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MR. ECKERT: My point is simply this, your Honor. If you were to go through Dr. Veith's exhibit and delete all the little parenthetical references to Exhibit 2 and Exhibit 3 you would have something that looks exactly like what many of the Objectors provided to us. And the fact that we did cite literature references, we did cite studies that we have done, doesn't vitiate this.

I think that the witness still has the qualification to make the statements herein even if they weren't supported by any data at all.

Now as a scientist, that's one thing. The scientist would want to have all the data before him in order to evaluate it, but I don't see that the Objectors can state that they can't cross-examine on this material if only to show what is missing.

JUDGE SWEENEY: Well, Dr. Veith doesn't seem to agree with you, if I understood his answer correctly. He seemed to agree that it was necessary to have the exhibits in order to properly cross-examine his testimony.

MR. PARK: Your Honor, if Dr. Veith had prepared his affidavit on the basis of his own experience only and had not referenced or used as exhibits any other parts of the literature, that would be one thing and this might be comparable then to some of the other exhibits that have been mentioned.

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But he didn't do that. The great portion of his affidavit is a repetition, a pulling together or parts of the literature, apparently parts that have not been available to us to cross-examine and I think that if these parts of the affidavit are pulled out or are not admitted into the record, there really is very little left.

I would move that the affidavit in its entirety not be admitted into the record for this reason. The large portion of it has not been made available to the parties to review.

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JUDGE SWEENEY: As I understand it, the exhibits were available as of April first. I just don't understand what happened, why they weren't distributed.

MR. ECKERT: I don't understand, either.

On the date on which I examined the PCB witnesses, Dr. Blanchard came in with a pile of exhibits and put them on the table and had a sign-up sheet.

Are you sure Dr. Simons didn't get a copy?

MR. RICHEL: Right.

What happened was -- as a matter of fact, you're going to find my name on that list. You requested that I ultimately sign it so that I might get a copy. I pointed out to you at the time that the list seemed to be for those who received a copy.

You said, "No. Put your name on that list," and I so did, and I asked you to promptly send the material; and I accepted that.

MR. ECKERT: I'm sorry Dr. Blanchard interpreted that as an indication that you had received a copy. That was the problem.

MR. RICHEL: No. I made that clear.

MR. ECKERT: I recall now our conversation.

JUDGE SWEENEY: Well, as I understand the questions of Mr. Richel and the answers of Dr. Veith, they seem to be in agreement that proper cross-examination of

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this written testimony in Exhibit 103 cannot take place, and therefore the exhibit will not be received.

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(Whereupon, Exhibit No. 103, previously marked for identification, was rejected.)

JUDGE SWEENEY: You are excused.

(Witness excused.)

JUDGE SWEENEY: At this time are we able to go forward with another witness?

MR. ECKERT: The only one we have left, I think, is Dr. Nebeker, because I think we will just stipulate here and now that the statement of Alfred J. Wilson is wholly in support of Dr. Duke's statement, and if Dr. Duke's is inadmissible then this statement is inadmissible.

However, we make no agreement that either one is inadmissible. We continue to maintain the are not --

JUDGE SWEENEY: Well, in that case, Mr. Eckert, we should have one to be identified as an exhibit and a ruling made on it.

MR. ECKERT: Very well, sir.

As a matter of fact, I'll supply you two.

JUDGE SWEENEY: Is Mr. Wilson available?

MR. ECKERT: Mr. Wilson is here.

Will you take the stand, please, Dr. Wilson?

Whereupon,

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ALFRED J. WILSON, JR.,

was called as a witness and, having been first duly sworn, was examined and testified as follows:

JUDGE SWEENEY: The written statement of Alfred J. Wilson, Jr., will be identified as Exhibit 104.

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(The document referred to was marked Exhibit No. 104, for identification.)

JUDGE SWEENEY: Mr. Wilson, are the statements made therein true and correct?

THE WITNESS: They are.

JUDGE SWEENEY: Now, as I understand it, Mr. Eckert, you're offering this in evidence at this time?

MR. ECKERT: That's correct, your Honor.

JUDGE SWEENEY: But at the same time, you have the statement that it would not be relevant in the absence of the statement by Dr. Duke?

MR. ECKERT: That's also correct.

JUDGE SWEENEY: All right.

In those circumstances, Exhibit 104 will not be received in evidence.

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(Exhibit No. 104, previously marked for identification, was rejected.)

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JUDGE SWEENEY: You're excused, Mr. Wilson.

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(Witness excused.)

MR. ECKERT: Our last witness is Dr. Nebeker, and we'll call him at this time.

Whereupon,

ALAN V. NEBEKER

was called as a witness and, having been first duly sworn, was examined and testified as follows:

JUDGE SWEENEY: The written statement of Mr. Nebeker will be identified as Exhibit 105.

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(The document referred to was marked Exhibit No. 105, for identification.)

Mr. Nebeker, are the statements made in your written testimony true and correct?

THE WITNESS: I have one correction. The statement stands correct -- .

JUDGE SWEENEY: With the exception of one exhibit?

THE WITNESS: There is a correction to the exhibit, sir.

JUDGE SWEENEY: Do you want to make that correction?

THE WITNESS: It's page 23 of Exhibit 1. There should be two columns inserted in that figure.

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MR. PARK: Are you in your affidavit?

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THE WITNESS: This is in exhibit No. 1, not the statement. Page 23 of exhibit 1.

This is in reference to the concentration factors calculated from this test.

Under Aroclor 1242, we should have a "Nominal" column as well as an "Emission" column; and that would be 3.5, 11.0, and 33.0.

MR. PARK: You're adding, now, to this table 7, sir?

THE WITNESS: Right.

MR. PARK: And you're adding a column on the right hand side?

THE WITNESS: This would be on the extreme left hand side, next to 2.8, 8.7, and 26. There would be "Nominal" 3.5, 11.0, and 33.

The same under Aroclor 1248: the four numbers under the "Nominal" heading would be 0.37, 1.10, 3.3, and 10.0.

Then on the far right side of the table, there should be a "Measured" column. Next to 22,000 should be 27,000; next to 29,000 it should be 36,000; next to 14,000 it should be 16,000.

Under Aroclor 1248, next to 24,000 it should be 50,000; 28,000, 58,000; and 108,000.

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MR. ECKERT: We have the personal copy of one

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of our people here, of the exhibits, but I think it would be better for the Reporter to have this copy.

JUDGE SWEENEY: There are 14 exhibits in total, Mr. Eckert?

MR. ECKERT: Yes.

However, we only plan to offer in evidence Exhibits one through four and 13 and 14.

JUDGE SWEENEY: Do you have any questions on direct, Mr. Eckert?

MR. ECKERT: No, I don't, your Honor.

JUDGE SWEENEY: The witness is available for cross-examination.

MR. PARK: Your Honor, we have not received any exhibits referenced in Dr. Nebeker's affidavit until this past Friday. I received a little package which says, "Enclosed are exhibits one, two, six, seven, eight, nine, and twel from Dr. Nebeker's statement. Exhibits 4, 11, 13 and 14 will be mailed directly to you by Dr. Nebeker. The remaining exhibits are available in the open literature."

We do have a couple of questions we would like to ask of Dr. Nebeker in connection with exhibit No. 2, which is the same as the one which was referenced by an earlier witness, but on the basis that the exhibits were simply not given to the parties on any sort of a timely basis so that they could be reviewed and cross-examination could be prepare

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I move that all exhibits to Dr. Nebeker's statement, other than exhibit 2, be not admitted to the record.

JUDGE SWEENEY: Well, did you try to go through his testimony since receiving the exhibits? Do you have any problem, really?

MR. PARK: We simply -- the package that came in Friday afternoon, your Honor, in view of the time pressure with four witnesses due to appear here today, and the time schedule moved up some 8 or 9 days over our objection, there simply was not enough time to review the materials that were first mailed to us and received by us on Friday.

JUDGE SWEENEY: But I'm asking you: are you really unprepared to cross-examine him today? Couldn't you go ahead on the knowledge you have?

MR. PARK: This one exhibit --

JUDGE SWEENEY: Is his testimony incomprehensible to you because you didn't have the exhibits until Friday?

MR. PARK: He recites items from the literature, your Honor, some of which is apparently just not available. He'll make a statement and then give a citation, "Exhibit 2," or some other exhibit, and there is no basis for us to review and satisfy ourselves as to whether the exhibit is accurate in our opinion or whether it is being misconstrued or is a statement taken out of context or what.

JUDGE SWEENEY: Well, you do have the exhibits,

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don't you?

MR. PARK: No, sir.

JUDGE SWEENEY: You still don't have them?

MR. PARK: Right now, we received last Friday, the preceding working day, some of the exhibits.

JUDGE SWEENEY: Well, I think you should make an attempt to cross-examine him, and if you come to an impasse where you can really point out that you have been prejudiced, why, that's a different thing.

But just to accept the fact that you are unable, I don't know; I think perhaps you are able to go ahead.

MR. PARK: Well, we do want to cross-examine on one point, your Honor.

JUDGE SWEENEY: Well, you should cross-examine him on his entire statement.

MR. PARK: We don't have the entire statement, your Honor.

Does the clerk have the entire statement?

JUDGE SWEENEY: You don't have his statement that has been identified as Exhibit 105?

MR. PARK: I have the statement, but I was including, I guess, the exhibits in the statement.

JUDGE SWEENEY: Well, see what you can do with his statement. And if you run into difficulty, then you can try to explain what the difficulty is.

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MR. PARK: All right.

Well, our difficulty is -- well, all right.

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CROSS-EXAMINATION

BY MR. PARK:

Q Dr. Nebeker, do you consider your 14 exhibits to be part of your statement or not?

JUDGE SWEENEY: No.

Mr. Eckert -- maybe you didn't hear him. He specified the numbers that would be offered.

MR. ECKERT: One through four, 13 and 14. And I can only reiterate that even if we had not provided the exhibits, we make every effort to do so.

This is the equivalent of the great bulk of Objector affidavits in that the Objectors would simply say, "So-and-so is true," without citing any authority whatsoever.

MR. PARK: We're not arguing the point.

JUDGE SWEENEY: That goes to the weight of what I said, Mr. Eckert, and you didn't object to it at the time. I don't know why you keep referring to it. That doesn't have anything to do with what their right to object -- their right to object; if they prefer to object they have the right to do so, and the fact that you didn't doesn't --

MR. ECKERT: Yes, your Honor.

But what I'm pointing out is, I agree with you

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that the objections go only to the weight to be accorded to the evidence, and if some of the exhibits are missing, then that goes to the weight to be accorded to the statements in the record; but not as to whether or not --

JUDGE SWEENEY: The situation is completely different.

You're saying they did not provide exhibits; you are providing the exhibits, only you didn't mail them out. You have them, for the record, here. The reporter has them.

MR. ECKERT: Very well.

MR. PARK: I didn't understand that. Are those on the desk before the Reporter exhibits 1 through 4, 13 and 14?

JUDGE SWEENEY: Right.

MR. PARK: Your Honor, could the record show that the note that I received this last Friday, three days ago, states that exhibits 4 -- it says, "Enclosed are exhibits 1, 2, 6, 7, 8, 9, and 12. Exhibits 4, 13 and 14 will be mailed directly to you by Dr. Nebeker."

Now, I appreciate his gesture there, but I guess -- when do we expect to receive these, sometime next week?

MR. ECKERT: Have any of the Objectors received Dr. Nebeker's mailing?

JUDGE SWEENEY: Then you still don't have exhibits 13 and 14?

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MR. PARK: That's correct, sir. We do not have those. I have not seen them.

MR. WILLS: With respect to Westinghouse, I did receive exhibits 4, 13 and 14 on the 16th of May, addressed to me by name.

JUDGE SWEENEY: How about 1, 2, and 3. Do you have those?

MR. WILLS: Those are the ones that came in late Friday morning or the first part of the afternoon.

JUDGE SWEENEY: So you do have all the exhibits mentioned, one through 4 and 13 and 14?

MR. WILLS: As of the 16th or 17th, I finally got all the exhibits. It should be noted I made telephone calls prior to the hearing on the 8th of May, trying to get the exhibits.

MR. RICHEL: I've received, your Honor, several exhibits on the 16th of May from Dr. Nebeker. Those were numbered 4, 11, and 13. Perhaps a day or two or three earlier I received a number of other exhibits directly from EPA, I presume.

JUDGE SWEENEY: Do you have all the exhibits, though, that have been mentioned: one through four, and 13 and 14?

MR. RICHEL: I do not know. I'll look at the numbers.

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I see 4; that was received, as Mr. Park indicated, on the 16th. I received that, whenever that was; that's number 4.

One and two apparently were presented to me several days earlier. I don't have a date on them.

Number three has not -- is not here. Therefore I have not received it.

That's one, two, three, and four; and the other exhibits you were discussing?

JUDGE SWEENEY: 13 and 14.

MR. RICHEL: As Mr. Park indicated, those were two exhibits received very late in time. I did receive those on the 16th of May.

JUDGE SWEENEY: Mr. Park hasn't received them at all.

MR. PARK: We must be under a handicap, residing out in St. Louis. The mails don't seem to operate as rapidly as they do in New York and Pennsylvania.

But, your Honor, we had planned on the original schedule date of May 28 or 29, and I'm sure Dr. Nebeker would have gotten those things in the mail to us at least a few days prior to that date. It was not at our request that the hearing date was boosted up.

JUDGE SWEENEY: Mr. Nebeker, when did you prepare your statement?

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THE WITNESS: It was in progress most of the latter part of March.

JUDGE SWEENEY: And when was it completed?

THE WITNESS: About April 2.

MR. ECKERT: Your Honor, I have a suggestion which I know means delay, but it seems to me that it's the only alternative at this point, and that is this: I will personally stand at the xerox machine today, if necessary, to make sure that everyone here gets copies of everything that he needs. Then, at the conclusion of the hearing on all other substances, all other witnesses, if there is time left over before the 31st we can take another day, if necessary, and bring back Dr. Nebeker and Dr. Veith and have cross-examination at that time.

MR. PARK: Your Honor, I'd object to that.

At great inconvenience we have rejuggled schedules and cancelled dates in order to be here at this hearing on this date, having made our plans -- as the transcript shows -- for May 29 or May 28 as the date on which industry would cross-examine the EPA witnesses on PCB's.

It was not until, I believe, last Tuesday we heard -- by happenstance, by telephone -- that the date had been changed to May 20. So we rejuggled our schedule and we are here today to cross-examine.

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We are surprised and disappointed that we have not

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been given affidavits intact with all the exhibits and so forth. I feel a little bit like a party to any other trial who has shown up in timely fashion and the other party is not present.

I would think a dismissal would be proper, or in this instance, that the affidavit in question would not be admitted into the record.

MR. WILLS: Your Honor, with respect to Mr. Eckert's proposal: as he knows, I talked to him last Tuesday evening after I found out about the changes and informed him at that time that I was supposed to be present at a hearing on May 20th, 1974, in Columbus, Ohio, and asked him if it was possible to change the hearing back to the original date, the 28th and 29th; and he said no, due to the pressing of time we would be concluding the hearing on the 24th of May, so therefore there would be no way to move it back to the 28th and 29th.

Now, at this point, when it's obvious that they have not gotten their evidence out in a proper timely manner, now he's willing to go back to the 28th and 29th.

MR. ECKERT: I don't think I told you that it was not possible. I just told you it was not my discretion, that Judge Sweeney has the authority to control the conduct of the hearing, and it's up to him as to whether he was going to allow the hearing to continue on beyond any given

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date.

I was not able to make any representation on that. I wasn't in the hearing. Mr. Rogers had been conducting it, and I could not --

MR. RICHEL: Your Honor, if I may speak?

As I understand the rules in part 104, the rules for the conduct of these hearings, EPA would be free to reopen hearings if they wanted to consider the propriety of information that was excluded during the course of these sessions. That option would remain open to them if they saw fit.

I'm saying now that it makes no sense and is unfair to treat us differently than others in recent days, and reopen the hearing informally for us when that was not the case for other Objectors.

Testimony was deemed irrelevant or improper rebuttal for other Objectors, and it was not admitted into evidence. That testimony, as I understand it, will remain in the record, however.

I see no reason to treat us any differently.

MR. ECKERT: It seems to me, first of all, to distinguish your case, we are not talking about testimony that it improper rebuttal and therefore is inadmissible for all time, but rather the simple procedural point that you have not had the affidavit, the exhibits, far enough in

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advance to review and to cross-examine.

Now, at least, as to Dr. Nebeker, I would suggest that we back up ten minutes where we were before when Judge Sweeney said, "Well, proceed with the cross-examination of Dr. Nebeker, and if you can show that you were prejudiced, then we'll rule on that at the time," and I don't see any reason why we don't do that.

We can consider a later hearing later on, if necessary, for Dr. Veith, but I don't see any reason --

MR. RICHEL: You raised the issue through your suggestion now that a later hearing be held, and it is to that suggestion that we have been objecting.

MR. ECKERT: But I'm distinguishing this case. I think this is not the case where an affidavit is ruled inadmissible; this is a case where you simply haven't had time to prepare. In the other cases it could not have been cured by going back and preparing.

MR. RICHEL: As I understand the exclusion of Dr. Duke's testimony, it was not because of lack of time, but because --

MR. ECKERT: I'm not suggesting we bring back Dr. Duke or Mr. Wilson. I'm suggesting that we proceed with the cross-examination of Dr. Nebeker right now and that if necessary we open up the hearing, re-open the hearing, to cross-examine Dr. Veith when you have had all of his exhibit

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and a chance to review them.

JUDGE SWEENEY: There is no question that this is proper rebuttal, Mr. Nebeker's statement?

MR. PARK: We would like to cross-examine Dr. Nebeker on a portion of his testimony, but we would move that all portions of his statement, except that on page 5, referring to exhibit No. 2, be struck because it is incomplete and not given to us in timely fashion.

This hearing date having been set with the concurrence of the EPA, the burden being on them to get their affidavits to us in timely fashion, it would be very irregular and a real burden on everyone concerned to have another hearing date another week or ten days hence.

JUDGE SWEENEY: Mr. Eckert, I think first of all you should give Mr. Park the two exhibits he doesn't have, 13 and 14.

Can you do that now?

MR. ECKERT: We can do it. We cannot do it right now. That's what's being xeroxed back in Washington. We can do it shortly.

JUDGE SWEENEY: Well, can you loan him your set, or does someone have a set he can look at?

MR. ECKERT: You have the only other copy we have, your Honor.

MR. PARK: Your Honor, that really wouldn't do muc

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for us to be given it right now.

JUDGE SWEENEY: Well, the others -- you can be looking at them and the other parties can go forward with the cross-examination. We'll see what the complications are. I just don't think it is impossible for cross-examination to take place of this witness.

MR. PARK: All right.

We would like to question Dr. Nebeker a little in connection with some statements made on page 5 of his statement.

BY MR. PARK:

Q Dr. Nebeker, if you will pull that out, please?

In the only full paragraph on the page, you make reference to exhibit No. 2; you might pull out that exhibit, please, also.

In this paragraph you describe an experiment with fathead minnows. Could you tell us, please, the purpose of the experiment?

A The purpose was to determine the toxicity of Aroclors 1242, 1248, and 1254 to the fathead minnow.

Q 1242 and 1248?

A And 1254.

Q Then, late in the experiment, you did analyze some fish tissues?

A Tissues were analyzed, yes.

brb 19

Q From which fish, now, were those tissues taken, sir?

A From which fish?

Q Well, let me ask: in your test how many fish were used?

A For the bulk of the test we used ten adults, and tissues were obtained from these ten adults.

Q From the ten adults?

A Yes. Or those that survived.

Q Are you saying all ten survived?

A In any given concentration there was quite a range of survival.

Q In, say, the Aroclor 1254, how many survived, sir?

A In the Aroclor 1254, we had -- this is on page 19 -- it's given: none survived at measured concentration of 15 micrograms per liter; nine survived at 4.6.

Q This is on page 19 of exhibit 2?

A Yes.

Q And this is Aroclor 1254?

A Right.

Q When you say nine survived after three weeks at what level?

A This is after approximately eight months

Q Was this that table entitled "Spawning and Egg

brb 20

Production of the Fathead Minnow"?

A Yes.

Q This was after what? You say after eight or nine months?

A Yes.

Q Is that a normal period for a toxicity study, sir?

A No.

This is full life cycle studies. These types of studies should be conducted, really, with any toxicant that we are concerned with. The economics prohibit it most of the time.

Q But this is s toxicity study?

A Yes.

Q How often do you run a study of this duration, Mr. Nebeker?

A It took two years to complete this one study.

Q Have you run this type of study on other substances, sir?

A I am now conducting studies of a similar nature with supersaturated water in the Pacific Northwest, with good portions of the life cycle of the Pacific salmon.

Q Is that the only other nine month life cycle toxicity study that you have conducted?

A Duluth has just finished a two-year study with

brb 21

1248 and 1260. These are also nine month studies; they have also completed one test which lasted approximately two years with brook trout.

These are probably restricted to EPA labs because we have the time and the resources to handle the long, very complicated tests of this type.

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Q Dr. Nebeker, would you turn to your Table 6 in that exhibit?

Now, are the tissues that are analyzed to determine the results shown in this table taken from the same fish that were in the toxicity study?

A Yes, in the 1254 study.

Q Yes.

Looking, for example, at the mean PCB concentration of 0.52 micrograms per liter and, say, looking at the number of males in Tank B, Table 2 shows four and as I read the table, Table 6 indicates that there were five males in Tank A.

A This is from Table 2?

Q Would you agree with that?

Excuse me. Table 2, as I'm trying to relate the two tables since the same tissues apparently were used in--

A This is pooled samples in fish.

May I make a statement also?

Q Surely.

A I was not requested to address myself to bioaccumulation in these hearings. I was requested to address myself just to toxicity data, so this is part of the total exhibit. However, I will respond.

This is .52 on Table 2.

Q Yes.

eb2

Q Yes.

Look at Tank B, and under the number of males which shows four.

Then if you look at Table 6, 0.52, Tank A or, rather, Tank B, the males.

Now as I read the table there were two fish analyzed separately and then four fish were pooled.

A These are samples and not necessarily whole fish. These could be samples that were possibly run for replicate -- to run replicates of an individual fish for checking for error in the methodology, so it would not necessarily be the fish; it would be samples representative of those fish.

I also did not run these samples. These samples were run in Columbia, Missouri. Often you run replicate samples of an individual so you can check your error, so it would not necessarily be the whole fish used in that particular sample.

Q Dr. Mebeker, why were the fish tissues not analyzed at the Duluth Laboratory?

A We didn't have the capability. This is a rather sophisticated, time-consuming methodology. Dave Stalling had the only available facility at that time. This was 1971. Gil Veith had not come on board. We had no one capable. I am not a chemist. This is not my background.

Q Let me ask you to stop back just a moment, a

eb3

hypothetical question not on this table.

If a given fish with some unknown quantity of PCB in the fatty tissues were to be analyzed on a wet or whole fish basis, would the resulting PCB content be greater than or less than if fatty tissues only were analyzed or the fish were analyzed on a lipid weight basis?

A If you analyzed the fish on a whole body your figures would reflect a lower level.

Q And if only the lipid portions of the fish were analyzed the results would be higher?

A Right.

Q Could it be possible that since these tissues were not analyzed at your laboratory but were sent some distance away and analyzed at a laboratory in another state that the results could have been -- the analysis could have been made on the basis of fatty portions only?

A No.

Q How can you be sure?

A These were frozen, sealed, and shipped for whole body analysis.

Q Well, do you know for a certainty that the laboratory did not do what is quite often done and that is remove the fatty portions for analysis?

A Fathead minnows are small, miserable boasts and it would be very difficult to dissect fatty tissues from.

eb4

Q But again --

A It's potentially possible if they wanted to take the time. I would very much doubt it. He was very pressed for time.

Q Well, is your answer-- Do you know for a certainty that the laboratory that actually analyzed the fish did not remove the fatty portions only and analyze those?

A I'm assuming from the data that he sent me that fatty tissues were not dissected and analyzed separately.

Q You still are not answering my question, Dr. Nebeker. Is it possible that the fatty portions only could have been extracted--

A Certainly.

Q -- and analyzed?

A Certainly.

Q In which event, if that had been the case, the results reported would be higher on a parts per million or billion than if the whole fish had been analyzed?

A (Nodding affirmatively.)

MR. PARK: The witness nodded Yes.

BY MR. PARK:

Q Looking at Table 6, Dr. Nebeker, -- or keeping that in mind -- what is the highest level of PCB that has been found in fish in the wilds, in the environment as far as you are aware?

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eb5

A I'm not really familiar with field data. I have not spent much time on this.

Q Would you have any ballpark guess? Would it be five parts per million?

A There are records in Dr. Stalling's and Meyer's paper that refer to levels around 200 parts per million in fish from the Hudson River with background levels--

Q I was just asking about--

A I have not concentrated the concentration factors.

Q What would be the next highest level in fish that you're aware of, in the wilds now?

A That's the only record that really comes to mind. I think data from Dr. Veith shows levels near that range in certain areas of Lake Michigan.

Q And certainly they would be the highest that anyone would have found anywhere in the environment. How do you account for--

MR. ECKERT: I object to that. That's argumentative. The witness didn't testify to that at all. You're assuming that.

BY MR. PARK:

Q On the basis of your experience, Dr. Nebeker, how do you account for a level of a thousand parts per million which Table 6 would indicate in fish that are apparently thriving and reproducing? These are fish that were sacrificed

eb6

at the end of the nine-month life cycle toxicity period.

A It is typical of these primary grazers that these materials will be stored in the fat. As long as they are not starved, it is non-effective at relatively high levels as long as they are not starved and release this back into the blood stream.

Q So are you saying that levels in these amounts are apparently not harmful to the fathead minnows?

A Based on this data we would have to see if reproduction was affected. This was what I was actually looking for. A long-term characteristic of PCB's is that they are a chronic, long-term food chain problem. The initial exposure to many animals can be relatively high and not affect the animal itself. However, reproduction is affected.

Being consumed by predators, it affects the larger predators in the aquatic system.

Q Well, it is a fact, isn't it, that some of these fish that were sacrificed were at least apparently in good health after nine months with the level of 1,000 parts per million PCB?

A Yes.

Q In your judgment, would a level of PCB in fish of, say, .1 of the level shown in Table 6 be more consistent with your experience in fish toxicity studies?

A No. If you look at fish that are found in natural

eb7

situations with continuous exposure to these levels, they would have tissue levels that high.

Q But the highest level of fish-- Again the highest level of PCB in any fish in the wild of which you are aware you feel-- In other words, I'm not holding you to this but--

A These are survivors that were found by the fisheries biologists in the field. I cannot account for all those that were destroyed prior to the survey.

Q Dr. Nebeker, you mentioned earlier that this was a life cycle toxicity study for the duration of nine months, and then you did mention that you were not really prepared to speak in connection with the concentration factors.

But I note that Table 6 on the right-hand side does contain two columns entitled "Concentration Factors." Should these two columns not have been part of the table?

A No, that's data that was accumulated by our chemists during the course of the study. We also gave some fish to the University of Minnesota for analysis of ATP systems or effects of PCB's on these other systems with which I am not very familiar.

Q Which tank were they from? A or B?

A Those were from all tanks.

Q You did not sacrifice all fish yourself?

A I sacrificed these fish, right. We have a routine method of utilizing our additional fish that are sidelines to

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eb8

the main. We have offspring reproduced and we check for additional survival after.

Q But you say some of the fish whose tissues are recorded here in these tables were given to other parties?

A Yes, sir. This is recorded in the text.

Q Was that before or after analysis?

A This was before analysis. These were prior to the onset of spawning so they weren't involved in the reproductive portions of the test.

Q But were these fish that were survivors at the end of the nine-month time period?

A No.

Q Did they die during the test?

A No.

Q Were they not fish that were included in these tests?

A They weren't included in the reproductive portion of this test, no. They were incidental to the reproductive portion of these tests.

They requested that I expose some fish for them for another on-going test because I had the only facility. We do this routinely with gas work in Oregon. We have the only facility for treating fish in this particular manner, so we try to make this available to graduate students.

Q But these are other fish you're talking about, aren't you? You're talking about other activities of your laboratory?

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eb9

A Right.

Q I'm sorry. I assumed you were talking about these fish here.

A No.

Q Who analyzed the water samples shown on Table 6 and Table 2?

A I analyzed some. Frank Puglisi analyzed some. David Defoe analyzed some. Other chemists under the direction of Gary Glass also ran routine analyses of these waters. We have a very detailed analytical program to characterize-- We use Lake Superior directly, without any treatment or changes. We like to characterize the lake at all times, so we have a good feel.

This is mainly for our metals work. We have a good feel for what is in the water that might affect metals, so we feel we have a very good analytical program for giving us the water chemistry backup.

MR. PARK: That's all we have. Thank you, Dr. Nebeker.

BY MR. WILLS:

Q Dr. Nebeker, since I haven't had the opportunity to fully take a look at your exhibits, I only have a few questions raised generally by the discussion in here and also a cursory review of the exhibits.

Taking 1 and 2 together for a second --

eb10

A Exhibits 1 and 2?

Q Right, to your testimony.

Apparently they were done in 1970 and '71.

A Yes, sir.

Q And they are just now being published?

A Yes, sir.

Q Can you tell me what the objectives of your studies were back in 1970 and '71?

A Our initial objectives were to, number one, see if PCB's were toxic to aquatic organisms.

Number two, if they were, at what levels and to what organisms.

2B

Q For what end purpose?

A For protecting the aquatic environment from potential toxicants.

Q You mean setting up standards?

A Initially this was just to determine if they were toxic, and to see if EPA would have some involvement with them.

Q Were those set up merely as screening type tests or laboratory evaluation of the effects of a toxicant upon a particular organism.

A Screening?

Q A screening test as has been referred to in other testimony, which is where you dose, at sort of a regular

eb11

concentration, various species just to see whether or not there's a level of toxicity and then design your experiments from that.

A We did initial surveys of a screening nature with Daphnia, yes.

Q Is that a nice test organism?

A It's a very good test organism.

Q Is EPA promoting that as its standard organism?

A We use it as one of many organisms.

Q Going back, as I understand it, you were looking to see whether or not these were toxic to your animals and whether or not they should be controlled.

Were there any sort of protocols established so far as conducting experiments or test procedures?

A Well, we started right from scratch, so we had to establish whatever methods. Mr. Papageorge was very helpful in providing us with some background and the test materials to use.

We got a full series of 1221 through 1268 and we used these initially with the Daphnia.

Q No outside agency or nothing except within house?

A Pertaining to what?

Q So far as protocols, test procedures, selection of species?

A We have an on-going bioassay methods committee.

eb12

We also have several outside agencies with committees formed to develop methodology, to criticize methods that are presented, to evaluate tests that have been conducted using those methods.

Q Do they get the tests that have been conducted before they appear in the published literature?

A The test methods?

Q Yes.

A Yes.

Q Is this somebody like the National Center for Toxicological Research?

A I don't know.

Q You don't know whether or not they have taken a look at your test methods and made any determinations with respect to them?

A I am not familiar with that, no.

Q Well, why three years between the end of the experiment and now being published?

A It's very simple. Changes in editors of the transactions of the American Fisheries Society.

Q Changes in the editor?

A This is a routine problem. In some of our journals we do have some lag time, up to two or three years. The final report was written in '72 and submitted to EPA at the conclusion of this work, fulfilling my obligation as far as

eb13

EPA was concerned.

I tried to make it in a more usable form for our researchers and other people. And we have been delayed significantly between the submission of the final EPA report and publication of the data in a designated scientific journal that we were to utilize.

Q When was the final EPA report accomplished?

A April 1972, as I recall.

Q I take it it is sort of fortunate it wasn't published prior to that anyway. You have already made one correction to one of your tables.

A That's really more of a clarification than a correction, the nominals. We calculated the nominals and measured concentration factors.

Q Did you receive any comments from anyone who reviewed these exhibits prior to now, pending publication?

A Comments?

Q Yes. Did anyone technically review them?

A The referees of the Fisheries transactions, the editorial review board of the National Quality Laboratory, our editorial specialist we have on contract at the University of Minnesota. We have a very rigorous editorial policy.

Q Do you know if the Sager Committee received a copy of these?

A I don't.

eb14

Q Did Dr. Thompson?

A Copies of these were mailed to Dr. Thompson, yes.

Q When?

A Which time?

Q How many times?

A They were mailed the latter half of March, approximately. As you know, you received portions of mine junt Friday. This was the third mailing, as I recall.

Q Okay.

When was the first time?

A Dr. Thompson sent a letter to me requesting that I address the Objectors and this was done, and I mailed this to him. I mailed-- The completed copy was mailed after April 2nd, because this is when I received Johnson's testimony from Columbia, Missouri.

Q In other words, you didn't make this available to the HATS Committee or to the EPA prior to the publication--

A Oh, this material? This material was submitted April, 1972.

Q To Dr. Thompson?

A Not to Dr. Thompson, to the EPA National Water Quality Laboratory Review Board.

Q Was this in raw data form or was it a rough draft of your final results?

A It was in the final report form submitted to EPA.

eb15

Q In other words, similar to what we have here today?

A No. There were 40 data tables that were included in the EPA report. Editorial Review suggested I not submit that many for publication.

Q Okay. So that I'm clear:

You're talking about a Editorial Review Committee for publication?

A Right.

Q What about the people within EPA for technical review for use within the agency?

A It was accepted in total.

Q Accepted until Dr. Thompson threw it out last November and just used the Water Quality Critoria?

A No, Dr. Thompson didn't receive a copy until-- Oh, apparently he received no copies at all so he has had no interaction with this stuff at all.

Q Nothing at all?

A No.

Q So far as you're concerned neither Exhibit 1 nor Exhibit 2 were used in the formulation of the standards we're talking about here?

A I really don't know.

Q I say as far as you know.

Have you ever had any trouble with Columbia Labs, getting data out of it?

eb16

A Yes, I've had some difficulties.

Q Dave Stalling was a member of the National Academy of Science Review Panel?

A Yes, sir.

Q Do you know whether or not he had duplicate samples evaluated when he did your bioaccumulation studies, or the residue analysis which went to the bioaccumulation?

A You mean possibly another laboratory?

Q Another laboratory, or duplicate samples within his own laboratory by different people?

A I don't know if he had different people do them. I know they do duplicate samples routinely for checking their own accuracy.

Q Do you do that, too?

A Yes, sir. Everything is at least replicated where physically possible.

Q Okay, where physically possible. It could be one percent or a hundred percent of the time.

A For any valid test it will be replicated.

Q And you never find any differences?

A We do find differences, yes. That's why we replicat

Q In some of the litorature they talk about a difference of a factor of two between two samples or three samples. Is that common, in your experience?

A A factor of two, like ten as opposed to 20? This

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eb17

is common.

Q Why were the particular species in Exhibit 1 and 2 selected?

A They're abundant, wide-spread in their distribution, significant fish food organisms primarily.

Q None of them are particularly sensitive to toxicants more than others?

A No. There are more sensitive and less sensitive animals available.

Q Is there any cross-feed between your laboratory and the Gulf Breeze Laboratory?

A We try to communicate. It's difficult but we try.

Q Your present laboratory is really a part of Gulf Breeze, isn't it?

A No, it is not.

Q It's not?

A No.

Q I stand corrected. You're an associate laboratory.

The work of Mr. Hanson down at Gulf Breeze, did you have that available when you were at Duluth or has that just been developed with respect to development of new bioassay techniques?

A Which? I don't know which one you're referring to.

Q Well, he developed apparently a new bioassay technique at some time --

eb18

A All of us do, --

Q -- in March of '74.

A -- in the course of our testing. This is routine because we start from scratch. No one makes our equipment for us. About everything we do is new, and this is why we have reviews of our methods.

Q But you don't have any reviews of your methods outside EPA, do you?

A Yes, sir. We have the MPAC Committee that is set up.

Q The who?

A I'm sorry, the Manufacturing Chemists-- I don't recall the-- We have Columbia, which is outside of EPA and which has reviewed. We have several universities that utilize our methodologies and we get feedback from them as to what is good and what is bad.

We have contractors who are utilizing methodologies and giving us good feedback as to the usefulness or utility of these methods.

Q Moving just a second off of your Exhibits 1 and 2 and going to the other one that you furnished under separate cover, which would be Exhibits 4, 11, 13 and 14:

With respect to Exhibit 4, what do you know about conditions under which this experiment was conducted?

A These were conducted under the general direction of

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eb19

Dr. Boisinger, who developed the methodology for Daphnia testing.

Q Do you know how the particular experiment was conducted that you have used in your reference?

A I was not present when these were run.

Q Okay. You've answered my question.

A He was using beakers, 200 milbeakers with glass covers, five Daphnia per beaker and using methodology recommended by the National Water Quality Laboratory Bioassay Committee.

Q Do you know when he ran them?

A November 1973 or probably '72; I'm not certain. I suspect it's '73 because this data took some real scrounging to find.

Q But it's fair to say you don't know?

A Right.

Q We can speculate all day.

Going to Exhibit 11 --

JUDGE SWEENEY: Is Exhibit 11 being offered?

MR. ECKERT: No, it is not.

JUDGE SWEENEY: Perhaps you should restate now the exhibits. As I understand it, it is 1 through 4, and 13 and 14.

MR. ECKERT: Right.

I certainly have to objection to cross-examination

eb20

of the witness on the references but I don't think it is going to serve much purpose on the record since the reference won't be in the record.

MR. WILLS: Then are we saying that you are going to strike the -- or you will join in a motion to strike that portion of Dr. Nebeker's testimony which is on page 8 at the bottom with reference to Exhibit 11?

MR. ECKERT: Absolutely not. It's been our practice right along that only that material for the record which is not in the published and open literature.

JUDGE SWEENEY: Go ahead with your cross-examination on Exhibit 11 if you care to.

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2C brb 1

BY MR. WILLS:

Q Except for the brief preface at the top of the table on Exhibit 11 that you have referenced on page 8 of your testimony, is there anything else you know about that particular experiment, such as the number of species of each fish?

A The number of species?

Q The number of individuals within each species.

A No.

Q In fact, you know nothing but what is on this table?

A Right.

Q It's sort of hard to evaluate from that information the way the test was conducted, to assess any validity to the numbers there. You sort of need the background information, don't you?

A I'm relying on the past performance of the laboratory.

Q Okay.

Going to exhibit 13, I find it a little hard to understand where this data came from. I'm assuming that the table that contains the references to the various isomers goes with the letters apparently signed by Arlene Shelhon?

A Yes.

Q And am I correct in that she has compiled this

brb2

table from the work of LaVarre --

A Yes.

Q -- Uhlken when he was an intern in the laboratory?

A Yes.

Q And this work is previously unpublished, and there are no written explanation of test procedures, conditions, anything unusual happening?

A This is what I received from Arlene.

Q There is no showing of the test procedures or the competence by which the isomers were prepared by Ron Webb?

A The test procedures are those accepted by the bioassay committee.

Q You assume that. It is not stated as such in this table.

Is that correct?

A I'm assuming.

Q You're assuming?

A Right.

Q If you were going to evaluate someone's work, would you desire to have more information than what is on these two pieces of paper?

A If I were unfamiliar with the laboratory and the personnel I would like to go to the laboratory and see what they were doing, yes.

Q Or see it written up?

brb3

A Yes.

Q In a procedure paragraph.

With respect to Exhibit 14, the four pages, do you know how many individual fish were used for each test? Do you know why the particular pH was selected that was used in the test conditions?

A It's representative of common pH values where these fish exist.

Q Where each exist? You mean bluegills, catfish, salmon, trout, and perch all exist in the same place?

A These pH values will occur within the range of each individual fish species, yes.

Q The alkalide, the hardness, they all live in the same type of conditions?

A No.

They all live in a range of conditions ranging from lethal and low pH to optimum to lethal at a high pH. These are representative values that we used in these particular tests.

Q It so happens they all were the same on table 1?

A Very likely they used the same water.

Q Well, with respect to this exhibit, if you were going to present an idea or present a paper, would you care to have a little bit more information with respect to exhibit 14, to give it some weight?

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A He has, I think, adequate references in his cover letter.

Q He does mention several tests; but are all of those at this time still being used, or have some of the bioassay techniques been changed as of 1974?

A Many are not changed; many are used routinely. The few that are changed are changed to try to make better tests. We still, however, do utilize tests that were found to be acceptable.

Q While I was looking at that table it reminded me -- this is your first exhibit, I'm sorry; Exhibit 2. I was looking at table 1.

This is going to be published, I take it, in the Transactions of the American Fish Society.

Looking at the left hand column, "Mean Measured Concentration", "51 - test tanks A and B", what is supposed to be shown by that concentration with no males and no females present?

A This is the number of males and females that were available in that tank for spawning, which means that they were killed by the concentrations prior to spawning.

Q So you didn't -- I don't understand; well, I can see --

Do you know who the Sager Committee is?

A No, not by that name.

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Q It's a statutory committee set up under the Water Pollution Control Act to review and make recommendations to the Administrator.

MR. ECKERT: Just for clarification, are you referring to the Effluent Standards and Water Quality Information Advisory Committee under Section 515 of the Act?

MR. WILLS: Right.

BY MR. WILLS:

Q You don't know who they are?

A I'm not familiar with their operations.

Q You didn't furnish any of your information to that committee?

A Not that I'm aware. I didn't personally, no.

Q I mentioned the word "protocols" a couple of times and I've gotten various answers.

Are there any written or available protocols for PCB work?

A You mean bioassay methodology?

Q Bioassay methodology.

A Yes, there is.

Q Where could this be located?

A The National Water Quality in Duluth; Western Fish Toxicology Station, Corvallis.

I have personal references. I am co-chairman of a committee and I can submit anything you'd be interested

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in.

MR. WILLS: I have no further questions.

JUDGE SWEENEY: Do you have any questions, Mr. Richel?

MR. RICHEL: Your Honor, I have maybe one or two -- honestly, one or two -- and it could take five minutes, so it won't prevent us from shutting the doors before lunch.

JUDGE SWEENEY: All right.

BY MR. RICHEL:

Q Dr. Lauer, in his testimony, said the following. If it becomes necessary for you to look at it I will certainly allow you to, but I'm referring now to one sentence. He said the following:

"It is noteworthy that results reported by the National Water Quality Laboratory showed that the reproduction and growth of several freshwater species are unaffected by aqueous PCB concentrations in the range of 2 to 10 micrograms per liter, which is 1000 to 5000-fold higher than the chronic limit of 0.002 micrograms per liter used by EPA."

Do you agree with the position stated in that sentence that such information does exist? I'm not asking for your position on the veracity.

A My data indicates much lower levels than that.

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Q I appreciate that.

Are you aware, however, that such data did exist and does exist?

A Data with the static tests with Daphnia are about that level, yes.

Q Now let me ask you just a final question, because it's puzzling to me. And I recognize that I may be stepping into some political problem here, but nonetheless I'll go forward.

You have referred to data from the Duluth laboratory. Dr. Lauer referred to it. Much of the testimony has been in existence -- I'm sorry; you have both referred to data from the Duluth laboratory. Much of that data has been in existence for several years. Why wasn't it used in any meaningful way in the preparation of the proposed standard?

MR. ECKERT: Your Honor, I object to the question. It's completely outside the scope of this witness' knowledge. I think he has already testified that -- well, maybe he hasn't.

My real objection is you haven't laid a foundation for that question. You haven't established whether or not the witness was involved in the preparation of the proposed standards.

MR. RICHEL: I'm not asking him --

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BY MR. RICHEL:

Q Well, to your knowledge, has there not been much data -- well, to your knowledge, has there been data created, amassed, generated at the Duluth laboratories over the last few years that has not been utilized in the preparation of the proposed standards?

MR. ECKERT: Again I object. You haven't established that the witness has any connection with or awareness of the preparation of the proposed standards.

MR. RICHEL: That's exactly what I'm asking.

JUDGE SWEENEY: He can say if it is true, Mr. Eckert.

THE WITNESS: Would you restate the question, please?

MR. RICHEL: Okay.

BY MR. RICHEL:

Q We both identified certain data that has come out of the Duluth laboratories. We also, I think, agree that some of this data has existed for several years.

First, to your knowledge, was this data used in a meaningful way in developing the proposed PCB standard, sir?

A I don't know.

Q Does it reflect itself when you look at the Statement of Basis and Purpose, which I presume -- you've read the

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Statement of Basis and Purpose?

A Yes.

Q Is there any indication there that the proposed standard is related directly to this data?

A I don't know. I haven't been involved with Dr. Thompson in any preparation of the effluent standards.

Q All right.

I really wasn't trying to do anything other than to identify what has been a very puzzling question to us, and I've identified it, I guess; but we haven't gotten a resolution to the issue that is going to come forth on the record.

MR. RICHEL: No other questions.

MR. WILLS: I just have one question.

BY MR. WILLS:

Q Now, maybe I misunderstood, but you did read the Statement of Basis and Purpose for the standards?

A I've read it in the Federal Register.

Q You did not read the --

A I apparently haven't read the --

Q -- the White Papers that were submitted, which was a xeroxed copy of some things that were in the Federal Register, but also the water quality criteria and the National Academy of Science report with respect to PCB's?

A I'm not sure. I'm very familiar with the National Academy of Science report. I don't know if I'm aware of the

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other documents you're talking about.

Q May I ask what you used as a basis for preparing your testimony that was written? Did you have copies of all the Objectors' statements, their testimony?

A I had copies of their statements of March 15, with the exception of Mr. Papageorge. I had his January 18 letter of Objection.

Q And you had the exhibits that were attached to the testimony?

A (Shaking head negatively.)

Q You did not?

A Not of Mr. Papageorge.

Q And you did not have, apparently, the Basis and Purpose document for PCB's?

A Apparently not.

Q I know we've gone through this a couple of times, but you finished your testimony on April 2, is that right, -- or thereabouts?

A Yes.

Q What happened between April 2 and May first, or May 15, to your testimony and your references?

A They were mailed in. I assumed they were being processed accordingly. Apparently they weren't.

Q You didn't check on them, or no one told you that they were mislaid in the mails or anything like that?

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A On several occasions I talked to Tom Duke, and the copy I mailed to Tom Duke was lost in the mail and I had to submit another copy to Tom. This was eventually the only copy that was received in Washington.

Q You submitted it to Dr. Duke, who requested the information initially. Wasn't it Dr. Thompson?

A Dr. Thompson. I sent this to Dr. Duke because he is the coordinator on PCB's. I sent it for his information.

Q You sent the original to him rather than to Dr. Thompson?

A No.

I mailed at least two copies, photocopies, of the original. I have the original in my lab.

MR. WILLS: No further questions.

MR. ECKERT: I have very little redirect, which I think I can get out of the way in a very few minutes, your Honor.

JUDGE SWEENEY: All right.

REDIRECT EXAMINATION

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BY MR. ECKERT:

Q As I understand it, there are several types of bioassays you can use.

Is that correct?

A Yes.

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Q And would you state which type of bioassay, in your opinion, gives the best results with respect to the chronic toxicity of a pollutant?

A What we're striving toward is a bioassay where we can test the full life cycle of the animal involved.

Q You were questioned about the analyses which were performed by Dr. Stalling on the fathead minnows. Did you specifically request -- let me rephrase that.

In your request to Dr. Stalling, did you specify whether or not he was to use whole body or fat analysis?

A We requested whole body analysis.

Q In your opinion, did -- no, let me rephrase that.

State whether or not in your opinion Dr. Stalling is a careful worker who can follow instructions.

A He's highly qualified and comes well recommended.

Q Are there any data in existence with which you can compare the figures that he obtained for minnows to determine whether or not they are in the right ballpark for whole body analyses?

A He has volumes of data available for comparison, yes.

Q Are some of those data whole body analyses?

A Many of them are, yes.

Q And will you state whether or not the analyses that were performed on the fathead minnows which you sent

brb13

him for analysis are consistent with the other data which you have seen?

A Yes, I think they're consistent.

Q In brief, could you describe the procedure which is followed for outside review of EPA scientific papers which are proposed to be published in the scientific journals?

A We, number one, submit our rough draft to our colleagues in the laboratory who are familiar with us and our research. After they "tear it apart", we have a rewrite. If it is acceptable, this is submitted to the National Water Quality Laboratory review committee headed by Dr. Spoor.

Usually we have two or three sessions there, then it is submitted to Dr. Dee Smith, the University of Minnesota for review. If we clear her, then it goes on to the journal that we hope to have accept our data.

They have usually at least three referees from various agencies -- government agencies or universities -- who critically review the manuscript for accuracy and content.

The editor of the journal reviews the material. If it is acceptable, then it is published.

Q Does the outside review include review of the bioassay procedures which were used, and criticism of those procedures?

A Yes.

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Q Now, you were questioned by Mr. Wills with respect to exhibit 13.

Are you familiar with bioassay procedures that are followed at Duluth?

A Yes.

Q Can you state what, in all probability, was the bioassay procedure followed for these tests?

MR. WILLS: Your Honor, I would object to a response to that question, as to a probability. The next will be a possibility or a suspicion.

If he knows, I think he should be allowed to answer the question; if he does not know he should so state, rather than just guess as to the probability of the procedure.

MR. ECKERT: Very well, I'll rephrase it.

BY MR. ECKERT:

Q Do you know what bioassay procedure was used, Mr. Nebeker?

A We used the standard Daphnia bioassay procedure recommended by the Committee so that our results can be comparable.

Q When you say "we", are you including Duluth in that?

A In "we" I am referring to Duluth, yes.

Q In other words, you're stating that there is only one set of procedures that is used?

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A For the Daphnia statics.

Q For the Daphnia statics.

A Yes.

Q Now, with respect to -- I believe it was exhibit two where table 6 showed levels of fish of 1000 parts per million.

Is that right?

A Yes.

Q Now, in the wild -- strike that.

Was any pathological examination done of fish that were destroyed in this experiment?

A External observations, yes.

Q Well, some of the fish, at the end of the study, were still alive.

Isn't that right?

A Yes.

Q Was any pathological examination done on those after they were killed?

A You mean internal?

Q Yes.

A No.

MR. ECKERT: No further questions.

MR. PARK: Your Honor, I have a couple of recross I would like to ask.

JUDGE SWEENEY: Go ahead.

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RECROSS-EXAMINATION

BY MR. PARK:

Q You mentioned Dr. Stalling at the laboratory in Missouri in connection with analyses of the fish tissues.

Did he himself actually perform the analyses?

A Initially he was doing some of these analyses. He was in an administrative position where he did have other people run some of these analyses for him.

Q Normally you would expect that someone other than Dr. Stalling himself would actually perform the analyses?

A Yes.

Q So Dr. Stalling's qualifications as a scientist would not necessarily be reflected in the analytical results of someone else, beyond the fact that Dr. Stalling might be an administrator?

A I think it would, because he would very likely instruct the people doing the work; the quality control program would keep fairly close track of the work that was being done by his people.

end 2C

2D ebl

Q How did you receive the results of the fish tissue analyses from Dr. Stalling? Was it on the telephone?

A No. It was on data sheets.

Q I see. In writing?

A In writing.

Q Could you take a quick look again at these Table 2 and Table 6, and I would just like to ask you, Dr. Nebeker:

Looking at Table 2, it lists six groupings of fish from a control group that apparently had no PCB in the water, and five other groups that had varying amounts of PCB. How would you compare-- Well, strike that.

I note that moving to Table 6, the fish in the water that had a PCB concentration measured at 0.52 micrograms per liter had -- when they were sacrificed, had in the males a mean value of 81 micrograms per gram PCB and the females 105 micrograms per gram. This could be expressed in parts per million I suppose.

A Yes.

Q Moving back to Table 2, it would appear, would it not, that the fish that did contain in their tissues in their bodies 81 parts per million PCB in the males and 105 parts per million in the females were healthier, at least with respect to the column headings here-- spawnings, total eggs, number of eggs per female, and so forth -- than the control group that had no PCB in the water.

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A This is a consistent observation in bioassays, yes.

Q Consistent that some PCB generates more health in the fish than no PCB?

A No, not PCB. About any bioassays we've run on a very long-term basis like this there appears to be a curve prior to death. There are theories proposed. The additional stress is more invigorating at the non-lethal levels. It's a trend throughout mammalian insecticide studies.

Q Calling your attention back again to the exhibits that were tendered here today, 1, 2, 3, 4, 13, and 14, have all of these cleared the review that you've described?

A No.

Q Have any of them cleared the review?

A 1 and 2 have been accepted for publication and will be out in July and October.

Q But none of them have yet been published?

A Not if by "publication" you mean reprints are available, no.

Q Or have yet appeared in any publication?

A No-- They have appeared in PCB Newsletter which you can or cannot accept as a publication. It's disseminated widely to those that subscribe to it.

MR. PARK: No further questions.

MR. ECKERT: Nothing further.

JUDGE SWEENEY: You're excused, Doctor.

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(Witness excused.)

JUDGE SWEENEY: Exhibit 105 and attached Exhibits 1, 2, 3, 4, 13, and 14, are received in evidence.

(Exhibits 105 and attached Exhibits 1, 2, 3, 4, 13, and 14, marked for identification, were received in evidence.)

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MR. ECKERT: I have nothing further today.

JUDGE SWEENEY: I wanted to ask you about some scheduling but I can do that off the record.

MR. ECKERT: All right.

JUDGE SWEENEY: We will recess then until nine o'clock tomorrow morning.

(Whereupon, at 12:25 p.m., the hearing in the above-entitled matter was recessed to reconvene at 9:00 a.m. the following day.)

brb 18

tank cars may drip while they're being unloaded, or there may be some drippage or spillage, and that this operation is open to the weather.

A Yes.

Q Now, I'm asking if this were covered over, wouldn't that reduce the discharge of PCB's?

A Oh.

I think another way -- and it slipped my mind whether we were thinking about this or whether we were doing this -- is just to put the spout in a drip-catcher. We have been thinking about things to make sure that any drip simply went into a glove.

Q Well, the question I asked was if the unloading area were covered and protected from the rain, couldn't that have the effect of reducing the amount of PCB's that leak out into the effluent?

A I don't know.

I think it's a kind of a hard thing to say because you could say, "Well, in any one trip it might," but in the overall sense that material is going to move. It transports from a variety of ways -- dust, vapor -- and I could not guarantee it would be negative.

Q What precautions are taken to avoid accidental spills during unloading operations?

A Well, of course, there is very strong admini-

brb 19

control in the process, but I think the process itself, with it's top-loading arrangement, goes a very, very long way to eliminate practically-conceivable spillage accidents.

Q How about on the storage tanks themselves? Are there high liquid level alarms on the storage tanks?

A I doubt that there are high liquid level alarms. People, again from good administrative control, know the quantity of PCB in that plant in those tanks at all times.

Q What type of control at the transfer lines and the tank drain valves is employed?

A Tank drain valves?

Q As you drain from the storage tanks.

A Well, yes. Okay.

We put from there into the process. I was thinking about drain on the basis of removing undesirable contents from the thing, and there is no such system.

Q Is that done also?

A No. That's why I wanted a definition of your drain.

The transfer line that goes from the tank to the process is, of course, a closed pipe that is manifolded through valves to be sent to whatever portion of the Sharon plant the PCB's are used in.

JUDGE SWEENEY: Let's take a fifteen minute recess now

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end 1E

(Recess.)

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JUDGE SWEENEY: Back on the record.

Mr. Eckert?

BY MR. ECKERT:

Q Dr. Wright, you have discussed some of the levels of PCB's being discharged from the Sharon facility.

Have you investigated what types of PCB's are present in those discharges?

A Yes.

It is my recollection that our analysis of the homologs present reflect that there is quantities of 1254 and other material that was used in the distant past.

In relation to this I should like to make a correction to the record. At the Sharon plant and our transformer plants, we use 1242, not 1016. I was relating to the capacitor plants.

Q So then the capacitor plants use 1016 primarily; is that correct?

A Yes. That's correct.

Q Do the capacitor plants use any 1242?

A This is where I say it's in the process of phase-out; whether it's completed or not, I don't know.

MR. MC LAIN: No Aroclor 1254 is in current use in the capacitor manufacturing plant in Bloomington.

JUDGE SWEENEY: Do you accept that correction, Dr. Wright?

dr-2

A Yes, of course.

BY MR. ECKERT:

Q So we're still talking about two homologs, 1216 and 1016, and 1242; is that correct?

A At the capacitor plants.

Q Well, but at the transformer plant --

A No 1016.

Q Only one, 1242. Isn't that right?

A Yes.

Q Were you able to quantify how much of the discharge from the Sharon plant was 1254?

A It is my recollection all the material looked like 1254, more nearly like 1254

Q Do workers in the plant who work around PCB areas apply protective clothing?

A Yes, they have protective clothing, administrative procedures, and warning signs.

Q Is the protective clothing laundered on the site?

A No, it is not. They don't wear total protective clothing as we would use, for example, in the nuclear areas -- areas of radiation waste. We don't use cleanroom techniques from the standpoint of total coverage -- shoe covers, and that sort of thing.

Q What happens to leaking capacitors, rejects, and leaking transformers in these plants?

dr-3

What's done with them?

A Well, in the case of the transformers, the material is pumped back into good storage; and then the material that remains, if it has to be cleaned, it is cleaned. And the waste material goes into the PCB waste tank, as described before, and sent eventually to oxide incineration.

Q How much time would be necessary to conduct laboratory and pilot scale studies to see if activated carbon or some other treatment process could be used to control PCB discharges?

A Well, there are several levels that one would have to undertake.

If one would amend one's question to say, how much time would be required to develop the design for a cleanup of all of these systems, then that's a fairly major chore. I would anticipate it to be somewhere in the range of two to eight years, depending on how successful you were.

Q Well, assuming, hypothetically, you decided to go with activated carbon:

How long would it take for you to get that on line?

A What size? I mean, I don't know how to design it.

Q In other words, you'd have to know whether it was required to treat the entire waste stream, or part of the waste stream; is that right?

dr-4

A Well, I'd have to know at least some of all things. That's only part of it. I would have to know how large to make the through-put.

I would have to know at what velocities I could have through the charcoal, assuming that it worked at all, before I got channeling; and if it didn't work I'd have to know what residual volume to have there so I would have some idea of the frequency with which it should be changed, and to get the change procedures worked out.

From the laboratory to the -- the laboratory work has not been done. After the laboratory work, the problem of engineering design & development work is where really the crucial work would be required. You would simply have to have scientific information to make the design.

Q Well, you referred to the lab. But aren't there several industrial installations in which activated carbon is now used? So that there are full scale data?

A Oh, sure, but for removing of different components from a different stream. Oh, sure.

And their variation in performance is enormous. It depends strictly on what's to be removed, and from what stream.

Please understand that I don't even know if there would be any separation occur by moving PCB containing water through a charcoal adsorber. It may come out the outlet

dr-5

in exactly the same content that it went in the inlet.

Q You've suggested that effluent limitations for PCB should be one percent of the quantity of PCB processed.

Under such a limitation, what would be the concentration of PCB in the effluent from the Sharon facility?

A Well, first, let's go back and rephrase -- reunderstand the proposal.

The one percent would constitute the upper envelope. It would have two additional criteria to meet.

One is that the bioconcentration of any element destined for edibility by man would be maintained at or below the 5 ppm level specified by FDA.

Secondly, if there were a particular situation where this PCB-containing water was used in a feed stock preparation, then that limit would be dropped by another factor of ten.

Now, both those constraints, then, are working within the envelope of the one percent release. In other words, this is site-dependent, requiring on-site environmental data to substantiate compliance.

Q Has Westinghouse attempted to measure the PCB residue levels in the tissues of aquatic organisms in receiving waters for its facilities?

A Yes, it has.

Q Can you be specific about the levels which were

dr-6

found and the facilities which were involved?

A Yes, I can; certainly in the case of the Sharon plant.

In the Sharon plant, we found PCB levels on the order of 2 ppm and less in fish flesh.

Q Some were as high as 2 ppm?

A Yes.

Q And this is based on whole fish measurement?

A I believe the key is, the fatty tissue is the principal concern. I believe this particular test was on the whole fish.

Q In which organisms were these levels found?

A My memory is already shown to be defective in terms of what the sample was based on. If you would like to pursue this particular line of questioning, we have Dr. Munson here, who can supply this data to you directly.

MR. ECKERT: Your Honor, this is a bit irregular, but under the circumstances, I would like to call Dr. Munson to examine him on this line of questioning.

JUDGE SWEENEY: Have you finished questioning Dr. Wright?

MR. ECKERT: Yes. As a matter of fact, I am through with Dr. Wright.

And if there is no objection from Westinghouse, I would like to -- let me say this: I'm through with Dr. [illegible]

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if Dr. Munson can be available to answer these questions. If not, then I'm going to have to pursue this with Dr. Wright to the extent he can answer them.

JUDGE SWEENEY: Do you have any questions?

MR. WILLS: I have some redirect.

JUDGE SWEENEY: All right, then you are just excused temporarily, Dr. Wright.

end 1F

(Witness temporarily excused.)

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Whereupon,

THOMAS O. MUNSON

was called as a witness by the Environmental Protection Agency and, having been first duly sworn, was examined and testified as follows:

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DIRECT EXAMINATION

BY MR. ECKERT:

Q Would you state your name for the record?

A Thomas O. Munson. I'm a biochemist.

Q You're a biochemist?

A I'm a biochemist, yes.

Q And you're employed by Westinghouse?

A Yes.

Q Could you describe the efforts which were made to measure PCB residues in aquatic organisms in the receiving waters of the Sharon plant, please?

A Yes.

We electroshocked some fish downstream from the Sharon plant. The stream is not a very clean stream. There's quite a bit of other industrial effluent in the stream, so the only fish we got for our shocking were fairly good-sized carp. So the number which Dr. Wright referred to is based upon wet weight in fillets of the carp.

And the number he mentioned was-- I think the highest value we did find was about two parts per million.

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This would have been-- Aroclor 1254 was the closest standard.

Q Were any other homologs found?

A I don't believe so. It has been some time since-- This work was done more than a year ago.

Q Are there any other industrial dischargers or any dischargers at all of PCB's on this river, to your knowledge, other than the Westinghouse plant?

A To my knowledge, and my best guess would be that nobody would be discharging at levels in our order of magnitude. Our plant is very close to the source of the water. We're downstream from the dam just a short ways.

Q Did you measure the ambient concentration of PCB's?

A In the water?

Q In the water.

A No, we did not. At that time we didn't have the technical capability of doing so.

Q At that time was the level of PCB's discharged from the Sharon facility roughly the same, greater, or lower than the numbers cited by Dr. Wright?

A Okay. Let me explain to you.

The sequence of events was that we became concerned about the possible impact that we might be having on the environment around our manufacturing sites. This was several years ago, and at that time we initiated an environmental survey which I performed around the plants

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We were mainly interested in looking at sediments and at samples of the biota. It was a limited plan, so that in most cases we could not do a very extensive sampling of all levels in the food web. And at that time we were not sampling the effluent discharge or the receiving water, mainly due to technical problems involved in doing this.

So the answer to your question is at the time the biota were sampled, we did not have data on the effluent discharged. That data has only been generated in the recent past.

Q So you're saying that the data on effluent quality which Dr. Wright gave us is data which was taken at some point in time considerably after the study was made. Is that correct?

A Yes, that's correct.

Q To your knowledge, have control measures been instituted between the time the study was made and the time that the measurements of effluent quality were taken that might account for lowering of PCB's in the effluent?

A Yes. My guess would be that if we sampled again today, the conditions would be lower. I should not expect them to be worse.

Q Thank you very much, Dr. Hansen.

(Witness excused.)

Whereupon,

JAMES H. WRIGHT

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resumed the stand and, having been previously duly sworn, was examined and testified further as follows:

MR. WILLS: Could we have about a two-minute recess?

JUDGE SWEENEY: You have no further questions of Dr. Wright?

MR. ECKERT: We have no further questions of Dr. Wright.

JUDGE SWEENEY: We'll take a very short recess.

(Brief recess.)

JUDGE SWEENEY: Back on the record.

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REDIRECT EXAMINATION

BY MR. WILLS:

Q Dr. Wright, to clear up one thing about silicon, I believe you said silicon was used in capacitors?

A I'm sorry, if I did and if the record shows that, I should have said in transformers. As far as I know, silicons have never been used in capacitors.

Q Also, you indicated that the discharge into the waters of Sharon was either two grams or four drops. Have you recalculated that?

A Yes. It turns out to be 40 drops or basically two grams per day.

Q Now in response to one of Mr. Eckert's questions, looking at page 17 of your testimony, the 3400 to 8500 figure of workers involved was reduced down to 200. How did you

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arrive or what standard were you looking at to get the 200 people?

A I believe, Mr. Examiner, this is a very key point in these PCB's. I believe that it will come up again in the course of these hearings, that what we are basically convinced of is that much, probably 90 percent of our PCB discharges at the present time are the result of PCB that is saturated in the ground, in sewer pipes that may have been sealed but are still leaking to come in contact with ground and surface water to reappear.

I think we have-- At the Sharon plant, for example, I think we have a problem that if we terminate all production, all use of PCB on that site, we would not terminate, by any means, the release of PCB's to the environment down to the level of the proposed standard.

Now this poses, I believe, a very major problem. To say if the standard were instigated it is accurate to say that 200 people, workers at Sharon, would be affected, but we must say if we interpret the standard to apply to ongoing operations only, the active releases from current operations.

If on the other hand the standard is to say from all sources including those which are saturated in the ground from time past and from other sources that we simply cannot identify at the present time, then our only alternative

eb6

would be to shut down the entire Sharon operation and all the people that are employed therein and terminate our relationships with it, because we would never, in our opinion be able to meet the standard for emissions from the former spills in the area.

And I think this is where we go very quickly in that one plant from a matter of 20[illegible] people, with one interpretation of how the standard would be enforced, to a matter of 45,000 in the alternative of saying that the plant, whether it's binding or not, is discharging it and hence would be liable.

MR. WILLS: No further questions, your Honor.

JUDGE SWEENEY: Do you have any questions, Mr. Eckert?

MR. ECKERT: Just one.

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RECROSS-EXAMINATION

BY MR. ECKERT:

Q You stated that the PCB's would still be discharged if your plant shut down tomorrow. Would one source of those discharges be runoff from the land on which old spills occurred?

A Yes, that would be one source; yes.

Q So that for such lands at least it is your opinion that PCB's in the sediments might still become available to the environment through runoff; is that correct?

eb7

A Yes. I think principally I am worried about what is under that big plant. One of the first questions raised was what about flushing out all of the old lines and everything else like that.

MR. ECKERT: I have no further questions.

JUDGE SWEENEY: Can I ask one question, please?

How long would you have to close the plant down to prove the scientific correctness of your thesis?

THE WITNESS: Well, we are thinking now of doing it. If the plant takes a mass vacation this summer, we will at least have two weeks of opportunity to make these tests, and I have certainly recommended that we do just that very thing.

JUDGE SWEENEY: Exhibit 81 is received in evidence.

xzxzx (Exhibit 31, previously marked for identification, was received in evidence.)

(Witness excused.)

MR. ECKERT: Your Honor, I would like to ask at this time if Mr. Carlson has conferred with his Counsel?

MR. CARLSON: I'm sorry to tell you that I was unable to reach him.

MR. ECKERT: Well, at this point I guess we can defer it. We are very short on time today, your Honor,

eb8

and we have two more witnesses to get through, and I suggest that we move on to Dr. Simons at this time.

JUDGE SWEENEY:. Very well.

Whereupon,

EDWARD L. SIMONS

was called as a witness by the Environmental Protection Agency and, having been first duly sworn, was examined and testified as follows:

JUDGE SWEENEY: The written testimony on behalf of General Electric is in four sections. Which ones are you going to examine on, Mr. Eckert?

MR. ECKERT: Well, today I'm going to examine Dr. Simons on Section 2, and perhaps one or two questions on Section 4, which are the two sections of his material.

JUDGE SWEENEY: Will you be examining the other two witnesses.

MR. ECKERT: I'll be examining Dr. Lauer tomorrow morning, and I have no questions for Mr. Farnsworth.

JUDGE SWEENEY: The entire written testimony, all four sections, will be identified as Exhibit 82.

(The document referred to was marked Exhibit 82 for identification.)

xzxzx

xzxzxzx

CROSS-EXAMINATION

BY MR. ECKERT:

Q Dr. Simons, I will refer you to Section 2.

A I have it. Thank you.

Q On the second page you give the low flow of the Housatonic River as 14 cfs.

Do you have data on the average seven-day, ten-year low flow for the Housatonic?

A It is approximately I believe about 40, but I do not have the specific data with me. It has been compiled and published by the State of Massachusetts and is available.

Q On the top of the page you say "Application of Section 129.09(c) to a GE plant."

Roughly how many GE plants manufacture products containing PCB's?

A Four.

Q And which plants are they?

A Transformers are manufactured at Pittsfield, Massachusetts, and Rome, Georgia.

Capacitors are manufactured at two closely-related plants, one in Hudson Falls, New York, and the other at Fort Edward, New York.

Q Which of these plants discharge into receiving waters directly and which discharge into publicly owned treatment works?

eb10

A All four discharge directly into navigable waterways.

Q Now as to the Rome facility, what is the receiving water?

A There are drainage ditches from the plant, one of which goes to the Oostanaula River which eventually flows into the Coosa River.

The other drainage ditch goes directly to the Coosa River.

Q Do you have flow figures for those rivers?

A I do.

Q Would you give them to me, please?

A Yes.

On the same basis as the regulations call for, the seven-day, ten-year low flow for the Coosa River 1300 cfs.

For the Oostanaula, 495 cfs.

Q And what is the receiving water for the Hudson Falls facility?

A The Hudson River.

Q And its low flow at that point?

A 1600 cfs.

Q And the Fort Edward facility?

A The same.

Q You've given some detail about the levels of PCB's that would be required to be discharged. Could you tell me

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for each of these facilities what quantities and concentrations of PCB's are being discharged now?

A We analyzed to get data for the Refuse Act permit applications. The current discharge from the Pittsfield plant from current production is approximately .1 pound per day.

Q Are you able to isolate discharges from current production and discharges from old production?

A Isolate physically?

Q Well, how do you distinguish-- Let me ask it that way. How do you distinguish discharges from current production from discharges from residues?

A We transferred, at about the end of 1972, from the use of Aroclor 1260 to the use of Aroclor 1254. When samples are analyzed, we attribute any 1260 peaks in the gas chromatogram to residuals from past production and use only the 1254 peaks to establish the levels of current discharge, that is, discharge from current operations.

Q Well, let me ask you about 1260. Do you have data on the levels of 1260 now being discharged from the Pittsfield facility?

A They also run approximately .08 to .1 pound per day; almost the same as that from current production.

End 2A

20-1

Q Has an effort been made to elucidate or to identify rather the sources of contamination of the waste stream with these PCB's?

A The contamination from past operations, or from present operations?

Q From present operations.

A We have approached the problem of present operations with the same philosophy that Dr. Wright mentioned: that, because these operations in the manufacture of transformers do not require process water, that Pyranol, which is the G-E trade name for its use of PCB's, these operations do not involve water, the Pyranol is used in an anhydrous state.

Therefore, we have taken all of the steps that we thought were warranted and necessary to keep losses from that operation from getting into drainage systems that would ultimately be discharged to the river.

Q Have you identified the sources of the contamination? Because apparently there is some contamination of the effluent despite your best efforts.

Have you identified what these sources are?

A You have to understand that, in the operation of a transformer manufacturing plant, the transformer has to be filled at a particular station. It is done over a deadended sump, with carefully marked special hoses so that there is no opportunity for mistaking what you are dealing with. There is

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dr-2

a daily check by an engineer who goes around with a checklist to make sure that all of the hoses are in proper position; that the sump is not full; when it reaches a certain level, it is pumped out.

So, all of these stages of building transformers are monitored and controlled as carefully as it is humanly possible to do. With a big transformer which may hold a thousand gallons or more of Pyranol, the kind of losses that we are observing are in order of parts per million of the total amount being used.

Q Well, you have stated losses are in the order of parts per million.

How are these measured?

A I say, if you measure the total amount that's in the effluent stream. That is the only place where we can measure an actual loss from a plant. Inside the plant, the drains are deadended. The sump is deadended. It is pumped out daily.

Q What's done with the residue?

A Any waste material that is not recoverable for further use is transported to an incineration facility that we have constructed on site. This facility is capable of complete incineration of PCB's, with the only effluent being carbon dioxide and water.

So any PCB's that are not recoverable for further

use are incinerated on site.

Q Well, you have described what you have done, and you have also described that there are PCB's in the effluent.

Is it your testimony that you don't know how the PCB's get into the effluent?

A In handling any big equipment which must be transported from a filling site to a testing site, and back and forth, there is always the possibility of an adventitious loss of a drop here or a half a drop there.

Q Well, the transformers are sealed after they're filled, are they not?

A Ultimately they are sealed. There are operations that must be carried out in the testing of transformers before the sealing is completed.

Q What is done with a reject or a transformer that has been shown to have a leak?

A The Pyranol that is in the transformer is drained, and, as I said earlier, if it is suitable for reuse it is put back into the production system.

If the Pyranol is not suitable for reuse it is incinerated.

Q And the transformer from which the Pyranol was extracted?

A After it has been freed of its Pyranol it is repaired if it can be repaired. There are massive pieces

dr-4

equipment that are not likely to be discarded if there is any possibiility of repair and sending it back through the production line.

Q Is Pyranol a trade name for a PCB compound?

A It is the trade name under which G-E identifies its transformer fluid.

Q What does Pyranol consist of?

A It consists of the Aroclor 1254, and it consists of trichlorobenzinc.

Q How much of each?

A It's approximately a 60 - 40 percent ratio.

Q Have you made any attempt; that is, G-E made any attempt to measure PCB residues in receiving waters from any of its facilities?

A We have taken occasional samples from the Housatonic River, which is the receiving stream for the Pittsfield plant.

Q What levels of PCB were observed in the organisms?

A We have not sampled organisms. We've sampled the river water.

Q I see.

Could you tell me what levels of PCB's were observed in the water?

A The report that I have seen show values in the vicinity of the outfalls of between one and three parts per

dr-5

billion -- in that range.

Q Would this be before or after reasonable mixing had occurred, in your opinion?

A I could not give you an answer to that, because I have not gotten -- I have not seen a definitive position in the river where this was taken.

Q The sampling was done at only one point?

A No, samplings were made also below the outfall, and at a distance of something between one and six miles -- and I am not sure of the exact distance at this point, but it could be as small as one mile below the outfall--no detectable PCB's.

Q What was the analytical technique used?

A Essentially, the technique recommended by EPA: the extraction of the water with hexane, concentration of the hexane extract, and then injection of a sample of that extract into a gas chromatograph where calibration is done against standard samples of PCB's.

Q The limit of detection of that technique is only one part per billion, isn't it?

A That has been our experience.

Q So that if there were smaller quantities, you'd not expect to be able to measure them, isn't that right?

A We would have no reliance on numbers that would show up in calculation from that chromatogram as being b[illegible]

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one part per billion on an industrial type of sample.

Q Have you measured the PCB levels in the sediments of the river?

A May I check?

Q Certainly. Use any document you like.

A Yes.

Q Could you describe where the samples were taken and what levels were found?

A At the same sites at which this one-to-three part per billion range in the water, the sediments were 130 and 1,300 parts per million.

Q Were samples taken at the second point, the one six miles downstream?

A In areas where it was not detectable in the water, the sediments were 30 to 60 parts per million.

Q Were these identifiable as 1254 or 1260?

A I do not have that information.

Q Do you know when the samples were taken?

A October of 1971.

Q Therefore it would all be 1260, wouldn't it?

A It would probably all be 1260. Correct.

Q Have the control measures which you have been -- let me rephrase that.

You referred to control measures to minimize the discharge of PCB's.

dr-7

How long have those control measures been in effect?

A It is an evolving program. For example, the incinerator is a relatively new installation, within the past two years. The diking around the unloading area, or consolidation of filling stations to reduce the number of areas in which Pyranol is handled at the plant -- all of those have been steps that have been taken over a period during the last four years, let us say.

Q Do you have any data on the levels of PCB's in the effluent on or about October, 1971, when the samples were taken in the river?

A I do not.

Q Were any observations made of the aquatic population in the river at that time?

A We have done nothing with the aquatic population.

Q Now, in the Rome plant have measurements been made of PCB discharges?

A Yes.

Q Would you give me the data in the same fashion as you gave me the data for the Pittsfield plant?

A I don't have it in that same form, but our engineers, who have taken samples and made the appropriate calculations from that have estimated that the current discharge is on the order of one pound per day.

Q Which Aroclor is this?

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dr-8

A There, too, 1254 is the Aroclor that is used.

Q Could you describe the control measures currently in effect at the Rome plant in order to minimize discharges of PCB's?

A The same program of control measures is being installed at that plant, but it is not as far along as at Pittsfield.

But basically, the program is the same; that is, containment of the PCB's in the production area.

Q To avoid repetitive questioning, let me ask you a general question.

Have measurements been made of residues in biota for any of the facilities operated by G-E?

A We have made no measurements of biota for any facility of the General Electric Company.

Q Now, for the Rome facility, have any more measurements been made of PCB levels in the -- I believe you stated it was the Coosa and the Oostanaula River.

A The Oostanaula River.

I do not believe that my data on those plants indicate any analyses of rivers, but are basically the data of the plant discharge. I do not know of any numbers pertaining to the rivers themselves.

Q Could you give me for the Hudson Falls plant the levels of PCB's discharged?

dr-9

A These outfalls from the Hudson Falls plant, which are incorporated now in the permit application, in total come to two facilities, is on the order of 25 to 30 pounds per day.

Q 25 to 30?

A Yes.

MR. ECKERT: Your Honor, I think I have a good deal more questioning for Dr. Simons.

Would it be appropriate to break for lunch at this time?

JUDGE SWEENEY: All right. We'll recess until one o'clock.

end 2B

(Whereupon, at 12:00 noon, the hearing in the above-entitled matter recessed, to reconvene at 1:00 p.m. the same day.)

2C cbl

AFTERNOON SESSION

(1:00 p.m.)

Whereupon,

EDWARD L. SIMONS

resumed the stand and, having been previously duly sworn, was examined and testified further as follows:

CROSS-EXAMINATION (Continued)

BY MR. ECKERT:

Q Dr. Simons, you testified that the combined effluent from the Hudson Falls and the Fort Edward plants is 25 to 30 pounds a day. Is that correct?

A Mr. Eckert, I wonder if I might have your indulgence, before answering that specific question, to add some clarification to the answer that I gave you with regard to Pittsfield, because I think they're germane to the kind of answer I would have to give to your question.

Q Well, perhaps so.

A You asked basically two questions concerning the Pittsfield operation. One was the number of pounds per day that were being discharged and secondly, could we identify the sources of that.

I gave you a number of .1 pound per day of 1254 from current production. I think it's appropriate to indicate the way in which that number was arrived at.

We have two outfalls from the PCB plant where

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cb2

effluent has been found to contain PCB's. During 1973, each one of these outfalls was sampled once a week for 45 weeks and each sample was then analyzed both for 1254 and for 1260.

As has been pointed out both in our testimony and in the testimony of Monsanto, sampling of industrial wastes for a material like PCB's is a difficult process whose reproduceability is quite poor. The value of .1 pound per day was calculated by taking the average concentration for all 45 samples during 1973 and multiplying it by the average volume of discharge from those two outfalls. So there was no single number that was measured over a period of continuous measurement for one day and we collected .1 pound.

These were all calculated from single grab samples once a week for each of 45 weeks.

At the same time that I give you an average I have to also indicate that there were certain samples which gave values which were higher than that average and if we took the single highest value of each of these 90 samples and combined that with the effluent flow we would come up with a value of .8 pound per day as a maximum figure.

So there's a wide range, with occasional excursions as high as .8 pound per day on the 1254 and as high as .4 or .5 pounds per day on the 1260.

That puts, I think, the analysis into perspective. It is not a matter of collecting and weighing an actual .1

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eb3

pound. These are all calculated numbers. The actual parts per billion in the individual samples were usually in the range from one to ten parts per billion.

When you get down to analyses that are as close as that to the sensitivity of the method, the actual value can become distorted by a very small amount of any impurity that might get in during the actual handling of the sample.

But this is the best number we have and it's the number I gave you, but I thought it would require that additional clarification as to how it was arrived at.

Now let's come back and answer in a little bit more detail the question of where this .1 pound might come from.

To put that .1 pound per day in a possibly more illustrative format that would correspond to a small jigger of whiskey, about one ounce, so we are not talking about a major spill. This is a relatively small volume of liquid.

As I said, our philosophy was that for current production we should try to modify our manufacturing operation to reduce the possibility of any loss of PCB's. I probably am-- A year ago when I officially assumed my present responsibilities -- a little over a year ago -- I was probably in the same position as you in being unable really to visualize what these controls meant in a practical term, but I have made it a point to visit on two occasions the

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eb4

Pittsfield plant and examine in great detail the individual handling and manufacturing steps from the arrival of the tank car through the finished transformer, and I have quite a different appreciation than I did before of what a loss of one ounce can mean.

Remember, we are not manufacturing at this plant, only Pyranol-filled transformers. We also manufacture -- and the major part of our production is oil-filled transformers; Pyranol-filled transformers are not the major product at Pittsfield.

We have attempted to reduce to a minimum the number of places in the plant where we handle the Pyranol so that doesn't get spread out and handled everywhere. The filling is all done in a fixed station and I've explained that earlier, but after the Pyranol has been added to the transformer tank it must then go by conveyor to certain highly specialized test stations which have to go through a series of electrical tests to be sure, before the transformer is completely sealed, that it has been filled properly, that there are no air spaces and other things that affect its electrical performance.

This is a transfer operation during which the transformer is not sealed. It then may have to go back for further filling, which is another transfer operation. It eventually has to get a final topping off, all of this before the sealing.

eb5

At any one of the stages when you consider that some of these transformers will hold as much as 1500 gallons, even the loss of a fraction of an ounce on a workman's shoes, on his hands, these are things which I think even the most elaborate containment system in a massive manufacturing operation like that cannot guard completely against.

To put this again in terms that might be a little more illustrative, when it's available we all use gasoline to power our cars, and you know what happens when you use up -- when the attendant or at the self-service station, you yourself use a hose to fill up your tank. Your tank may hold 20 or 25 gallons. There are varying degrees of gasoline lost during that filling operation. I doubt that-- It is seldom as low as a drop or so; more often it's much more than that.

Again I want to indicate that we are applying very strict standards to the filling of this, but these are big equipments. It is inevitable that there is going to be something that gets on the lip, something that gets on the conveyor, and these are things that we try to keep to a minimum.

The goal is zero containment but in a plant as big and as old as this, and with workers around there who have to handle this in order to get it out to the test station, a loss of something of the order of one ounce during

eb6

the day's operations is, we think, a very creditable performance. I don't know of any other really heavy manufacturing operation which handles fluids in which that kind of level of control is displayed.

Now I think I can come to answer your question about Hudson Falls.

One minor correction. I said those numbers I gave you were from our permit application. I meant to say these are the numbers that appear in the draft permit for that plant which we have received from EPA Region 2, which indicate certain initial effluent limitations to be placed upon this plant.

And by the way, as you correctly said, the Hudson Falls and Fort Edward are so close together they are being considered as a single plant for purposes of this permit, so that the number given here was for the outfall that corresponds to the Hudson Falls plant, ten pounds per day as the daily average as the initial effluent limitation and for the discharge from the Fort Edward plant, the initial discharge limitation is 20 pounds per day. That's where the 30 came from, but again these are daily averages.

And once again I must refer back to -- I must refer to sampling procedures. We have not taken samples as frequently at Hudson Falls as at Pittsfield. They are more likely at once-a-month intervals so we have about ten of

eb7

those rather than 45.

These numbers again represent the average pounds per day as calculated from a parts per billion analysis and a flow rate.

There have been excursions which, in proportion, are about the same as we've had at Pittsfield. That is at Pittsfield I said we had an average of .1 pound per day and a maximum of .8. We have seen days when, if we took the analysis at its face value and calculated it through with the flow rate, we would end up with 90 pounds of discharge.

This reflects some of the difficulties in sampling. It may reflect accidental discharges in the plant. We just do not know, but I think that's the way in which these numbers have to be viewed.

An average number over a ten-month period and with maximum excursions can be as high as eight times or nine times as high as that.

Now I think that would represent the clarification I would give, up to this point, and I would await your further questions.

Q Let me see if I understand this correctly.

The 10- and 20-pound a day figures which appear on the draft permit, are those the same as the numbers which you arrived at by calculation from the effluent concentration and effluent flows?

eb8

A These are essentially the numbers that we arrived at from these measurements of grab samples over a ten-month period, averaged them out, and made the computation from the average flow rate through those discharges.

Q What was the range of concentrations which were observed?

A The concentrations observed at the-- I only have the average figure here. I do not have the range and the concentrations.

From the Hudson Falls, 350 parts per billion, and Fort Edward, 4,000 parts per billion, and it's these numbers--

Q I'm sorry, at Fort Edward what was it?

A 4,000.

It's these numbers which combined with the flow rates from those installations were used to calculate the average pounds per day.

Q Has GE attempted to measure the concentration of PCB's in the Hudson River below the plants?

A No.

Q Are the PCB's discharged from the Fort Edward and Hudson Falls plants all 1254?

A No. There are several important distinctions between the operations at these two plants which manufacture capacitors and the two plants that manufacture transformers.

To answer the first part of your question, it is

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eb9

not 1254. The capacitor grade Aroclor 1016 is used exclusively at the capacitor plants. And I would say that that probably accounts for 95 percent of the-- 95 percent of the production is with 1016 Aroclor.

Q What is the five percent?

A I don't know. There may be a few specialized oil transformers, mineral oil for certain specialized uses, but those are not a-- The large bulk of the production--

MR. RICHEL: We've been informed it is mineral oil.

THE WITNESS: That's what I said, mineral oil.

BY MR. ECKERT:

Q So far as you know then, no PCB other than Aroclor 1016 is used at Fort Edward and Hudson Falls. Is that right?

A At present that is so. We formerly had used the 1242 before 1016 was developed. 1016 is a relatively recent development by the Monsanto Company as a special grade for capacitors from which the higher boiling homologs have been distilled out.

In other words, we believe on the basis of the evidence from Monsanto that the 1916 is the most highly biodegradable of the commercially used Aroclors and that is a reason we switched to that for capacitors.

But there is also another very significant distinction between the use of PCB's in capacitors and in

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eb10

transformers. Transformers are, as I mentioned, relatively large units, as big as 1500 gallons capacity, and they are made in relatively small quantities. I guess you could say in the tens of units per day kind of range.

Being a big tank, you can put a hose into it and fill it directly that way.

On the other hand, capacitors are much smaller units and we're talking here about an operation in which we have to fill millions of small units with PCB's, and by "small units" I'm talking about things that might be the size of a pack of cigarettes or less, as small as that.

Obviously, these kind of units are not filled by a hose. They are filled in bulk by putting them in a tray which is sent into a vacuum oven. The whole thing is evacuated and then filled by filling that container with PCB's so that they are sucked into the evacuated cans.

That means, therefore, that when you take these out of that for handling there are not only PCB's inside the can but on the outside, and this must be disposed of, so that all of the handling problems, the units and all, increase the probability of losses by adventitious handling.

And then there's a third important distinction which was brought out in Dr. Wright's testimony, that for the electrical industry as a whole, there are approximately three times as much -- three times the amount of Pyranol or PCB's

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eb11

used in the manufacture of capacitors total as are used in the manufacture of transformers, so we're dealing with a total amount of material that is much larger and it is distributed over a tremendously large number of very tiny units which have to be filled.

So there's quite a major difference, all of which -- the processing of all of which accounts for the major discrepancy or difference between the discharge in the capacitor plant and that for a transformer plant.

Q Why are PCB's used in capacitors?

A The basic reason for the use in capacitors is to improve reliability and performance characteristics in a smaller volume of total product.

They also confer the safety factor of the non-flammability of PCB's.

Q Aren't there other diaelectrics that could be used, other than liquid diaelectrics? For example, hasn't Mylar been used in capacitor manufacture for example?

A There are certain capacitors-- You have to recognize that there are basically three types of capacitors and I want to put in one warning here. I am not an electrical engineer so that I cannot speak with the same degree of confidence as I have been speaking on the previous ones.

But it is my understanding and if it is permissible, Dr. Pozefsky from our Capacitor Department has my permission

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to correct me if I make any misstatements.

There are what we would call electronic-type capacitors which are basically -- many of which are a dry type and are manufactured without any PCB's at all and have this kind of aluminum and plastic film.

Then there are the kind which are manufactured at our Hudson Falls and Fort Edward-- Hudson Falls is basically the power transformers which are used in the electrical utility industry and for these there is no substitute for a liquid-filled transformer or capacitor.

The only place where there has been some experimental work that indicates a partial substitution to, shall we say, a dry type which doesn't use any liquid is in some of the industrial type capacitors of a kind that are used in the ballast for fluorescent lamp fixtures and air conditioners and so on, but I believe that the technology for that is not anywhere near the level where it can be considered as a short-range alternative to PCB's.

It would obviously facilitate greatly the production if we didn't have to handle liquids.

Q Why is there no substitute for liquid-filled capacitors in power applications?

A I can't give you a specific answer technically to that. It has something to do with the requirements that these capacitors -- the kind of currents that these have to

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carry. But I would have to defer an answer on that, unless you want to get clarification from Dr. Pozefsky on that question.

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Q Well, perhaps we can pass over that for the time being.

Have you attempted to measure the PCB levels in the sediments observed in the Hudson River?

A There have been no measurements made by us of the Hudson River.

Q Have the workers themselves been monitored? For example, have blood samples been taken and measured for PCB content?

A Before coming down here I checked with the medical director of our Pittsfield plant, who is aware of -- who can speak in terms of direct experience at Pittsfield and is aware of the situation at the other plants that use PCB's, because in our testimony we had indicated that the only medical effects that had been reported during the four decades that we were in this business have been occasional cases of chloracne or other minor skin irritations of a non-chronic nature which disappeared upon the transfer of the employee to some other operation.

I asked the medical director if that statement is still valid today; he assures me it is, and that that is the extent of the medical problems that we have encountered among the employees exposed to PCB's.

Q Well, that doesn't quite answer my question.

I asked if their blood levels have been monitored

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for PCB's.

A No, not to my knowledge.

Q Now, in specific reference to the medical data, I don't have it in your testimony -- yes, it's on page 6 -- the statement here reads that:

"Medical records show that over a nearly 40-year period, the only adverse health effects experienced by U.S. workers exposed to PCB's," -- etc. --"have been limited to occasional cases of non-chronic chloracne or other temporary skin lesions or irritations."

A Yes.

Q Now, I assume that over a 40-year period some of the workers died, did they not?

A That's a reasonable assumption.

Q Some of them might have gotten cancer; isn't that correct?

A MR. RICHEL: I would like to object at this point. The man is having visions of vinyl chloride and has introduced no basis into the record for this kind of excursion.

MR. ECKERT: Well, it seems to me that the basis for the record is the statement here that the only adverse health effects experienced by U.S. workers exposed to PCB's was non-chronic chloracne, and I'm trying to get at whether or not anyone bothered to find out whether these workers might

brb3

have had a higher incidence of cancer than the --

MR. RICHEL: I think the witness has made it clear that all inspection, all we did -- and we're not trying to make anything more of it -- all that we did was react to requests made by employees, and no further tests, no considerations of cancer, no considerations of -- no blood tests; nothing other than what we have said.

But if you further lay the foundwork, if all you further do is leave innuendo, then I think this is grossly improper.

MR. ECKERT: I'm certainly not leaving any innuendo.

BY MR. ECKERT:

Q Is that your testimony; has Mr. Richel accurately stated your testimony?

A These medical records are based upon the examination of workers who have come to the medical office of the company with a complaint. And these have been examined, and when they have been convinced that these complaints which were brought to the attention of the medical officials were a result of exposure to PCB's the worker has been transferred to other operations, and the complaint has disappeared.

MR. ECKERT: That's all I wanted to establish.

Thank you.

BY MR. ECKERT:

brb4

Q Getting back to the Hudson Falls and Fort Edwards plants; what is the total quantity of PCB's used at these plants per year?

A I've been advised by the Counsel for the affected products departments that they consider the data on total usage of product material as material that would be useful to competitors and should be considered as proprietary information.

MR. ECKERT: Is it your position, Mr. Richel, that this information relates to trade secrets, processes, or methods entitled to protection as trade secrets?

MR. RICHEL: Apparently that's the contention of the Counsel for the affected department, and that's why Dr. Simons indicated as he did. I have no reason to support or reject that contention.

MR. ECKERT: In other words, you don't know?

MR. RICHEL: That's correct.

I do know that it's significantly different from effluent data, and anything other than effluent data is given the opportunity for certain privileges under the Water Act Amendments of '72.

MR. ECKERT: That's not quite correct.

It isn't the only information subject to protection, methods or processes entitled to protection as trade secrets.

MR. RICHEL: That's correct.

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And that itself relates to other than effluent data.

MR. ECKERT: Well, we can dispose of this off the record.

BY MR. ECKERT:

Q I wonder if you would describe the sources, if you have identified them, of effluent contamination at the Hudson Falls and Fort Edwards plants?

A There is one significant source of contamination from the Fort Edward plant, which results from one of these basic differences that I mentioned to you between manufacture of capacitor and of transformers.

The transformer cases, after they are filled, as I stated, have PCB's on the outside just because of the way in which these tiny cases have been filled. That layer -- even after draining there is still a residual layer of PCB on the case, and it had been the past practice to remove them through a washing operation with an aqueous-based detergent; and that has been identified as a major source of water contamination.

There is one case where water was actually -- the only case where water was actually used in the processing of the equipment itself.

Q Excuse me.

Are you referring to transformers or capacitors?

brb6

A Capacitors.

The transformers, that have to be -- because of their size -- filled by this vacuum inpregnation technique, which means the entire capacitor is essentially immersed in a sea of PCB's, and when the tray containing these capacitors is taken out the PCB's are on the outside as well as on the inside of these little capacitor cans.

The vast majority of that PCB is allowed to be drained off and be reused, but there is always a residual film that remains on the can which must be removed before the can can be sent out as a finished product.

And the standard practice had been to remove that by a washing with an aqueous solution. That would represent the major source of contamination of effluent from the Fort Edward plant.

And the management and the operations at Fort Edward have recognized this and have now begun to investigate and are prepared to install alternate means of removing that PCB from the outside of the cans so that that single -- that largest single source of contamination is removed.

Q Now, you say you are prepared to install; but is the water wash still being used at the present time?

A It is.

Q That would account for the Fort Edwards plant.

How about the Hudson Falls plant?

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A The number that I have given for both plants -- or the numbers that I have given for both plants represent a total PCB concentration. It is not quite as easy to make the differentiation between current and residual in the capacitor manufacturing operation as it is in the transformer because 1016 and 1242 are much more closely alike than are 1254 and 1260.

So --

Q What's being used at Hudson Falls?

A 1016 is being used now, prior to the development of 1016 by Monsanto 1242 is used.

1242 and 1016 have very close to the same total chlorine content. The major difference has been the removal of some of the higher-boiling homologues present in 1242 that are not present in 1016.

It is a more difficult analytical procedure to try to differentiate between 1016 and 1242 in a chromatogram of a mixture of these two. It is a much easier job to differentiate as we do at Pittsfield between 1254 and 1260.

And so at Pittsfield we can look at a chromatogram and say, "Yes, this much is caused by residuals, and this much by current production."

It is not as simple an analytical job to do that at Hudson Falls, and therefore a large amount of that could very well be from our residuals of production that has been

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going on there since the early '50s, before any controls at all were instituted.

So the only clearly defined process operation associated with a loss of PCB's directly to the water is that detergent wash at Fort Edward. The other losses we cannot pinpoint and say how much is from a particular current operation and how much is from residuals from decades past.

Q Now, the Fort Edwards plant: what treatment is given to the wash water from the capacitors?

A None.

And rather than institute treatment, there is a process -- I would have to qualify that.

There are three stages in this: there is washing and there is rinsing. The wash water itself is internally recycled. The only thing that goes directly to the river untreated is the final rinse, which itself contains only a trace amount of the detergent so that the bulk of the PCB's that are removed by this washing operation do not leave the plant; they are retained internally and ultimately disposed of through incineration the way other waste PCB's are. It's only the final rinsing stage that goes untreated to the river.

And it is, in our opinion, a more satisfactory resolution of that problem to change the process rather than to try to remove the PCB's from the rinse water before discharge to the river.

brb9

Q When a transformer is installed, does it ever need to have its dielectric replenished?

A There are times when that has to be done.

Q What is the cause of that?

A I'm afraid I can't give you a specific technical answer to that question.

Q Well, would you infer, if it has to be replenished, that some is being lost through leakage?

A It could be some being lost through leakage; it could also be there may be -- remember that a transformer is not just a big tank filled only with PCB's. There is a very complex combination of wire with insulation, other kinds of materials in there. There's whole guts of very complicated electrical equipment.

Some of that must be thoroughly impregnated with the PCB at the time of the manufacture if it is to function properly. There may be other parts where that is not critical.

And over a period of use, it's possible -- and again I'm speaking only from conjecture since I do not know enough about the details of that -- it is possible that PCB's impregnate parts of the transformer where they don't normally become or are not normally needed, and therefore reduce the level of free dielectric.

So that's a second possibility that I throw out without the same degree of assurance that I have spoken with

brb 10

on other matters.

Q Do transformers ever need repair on the site on which they are installed?

A Usually -- and again I will speak only -- well, there may be certain repairs that can be done on the site. I don't know the nature of all the ills and ailments that a transformer can fall heir to during its thirty years of expected life.

So there may be some malfunctions that can be repaired onsite. There are others that require more extensive repair work.

Q When they need that more extensive repair work, are they shipped back to G.E. for work?

A There are service shops that the General Electric Company and other companies maintain at which transformers can be repaired, along with lots of other heavy equipment; they are not exclusively transformer repair shops.

Q Does G.E. manufacture transformers or motors for electric trains -- I mean, electric locomotives?

A If you're talking about the trains that operate on electrified lines --

Q Either those or for diesel electric locomotives.

A Diesel electric locomotives, as I understand it, do not need transformers. They have their own generators and generate electricity there.

brb 11

The main use of transformers in railroad transportation is on the electrified lines, where the electricity is taken from a third rail or from an overhead line.

And yes, we do manufacture the transformers that are mounted underneath the cars of such electrified railroads.

Q These are like all other transformers in terms of their susceptibility to leakage, are they not?

A I assume that they are.

They are designed of a size to fit under the railroad car, but basically the transformer is the same kind of instrument. It's made and welded shut, and so on, and I assume that damage that could occur to one can occur to another.

Q When you receive PCB's from the manufacturer, does it come in in tank cars?

A Yes.

Q How is it offloaded from the tank cars?

A Basically by the same kind of procedure that Dr. Wright described. It is pumped out from there into appropriate storage vessels, and from there piped to the areas in the plant where it's used.

Q Is it unloaded under cover from the elements?

A This varies from plant to plant.

At our Pittsfield plant that station is covered. It's a new station, relatively new. It was built with all the

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appropriate diking and sumping and so on, and that is unloaded under a cover.

I would point out, however, that these are -- these unloading operations are basically infrequent kind of things. You don't get this kind of a shipment in every day. This is not a daily operation, and these are carefully monitored as the transfer takes place.

end 2D

Q What precautions are taken to avoid spills during the unloading operation?

A The unloading operation, as I have seen it at Pittsfield, that I can speak of from direct observation, is carried out in an area which is diked and which has deadend sumps, so that anything which does drip or spill during the transfer operation does not get out of that area, is retained by the dike, goes to the sumps, and is pumped for recovery or incineration.

Q Are you familiar with the operations at Fort Edwards and Hudson Falls?

A The tank car there is on an open siding adjacent to the building.

Q Is the area around the tank car unloading platform diked?

A The diking is essentially accomplished by the building itself, whereas at Pittsfield there's an entirely separate area. There was no building there, so a separate dike wall was put up.

Q Are there deadend sumps at the Hudson facility?

A Part of the program that's being undertaken there now is to identify all of the drains accessible to PCB's which could lead into the aqueous discharge, and to block those off.

This was an old plant. We took it over in about 1952. I don't know what the age is, but it was not originally

dr-2

built as a plant. It was bought as an existing building, and as we go along through that plant, we find other areas that need attention. And there's a systematic review of all the drains, gutters, and so forth to plug up all the possible avenues of escape of PCB's.

Q Do you use PCB's in any other process than the manufacture of capacitors and transformers at any of your facilities?

A No.

The only manufacturing operations that use PCB's are transformer and capacitor manufacturing.

Q Are the PCB's treated or conditioned in any way prior to putting them into the capacitors or transformers?

A Yes.

Q What's done?

A There is basically a filtration type of process to remove impurities that may have been picked up during transit or from long storage in the tank car, and so forth.

Basically a filtering process through a porous bed.

Q Is the filter, the filtering material disposed of by incineration?

A Our incinerator can handle material, yes.

Q Well, is it handled at --

A Yes. I believe it is also disposed of there. Yes. Because this is a combustible bed.

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Q Do you apply heat and --

A Excuse me, when I'm talking about this, I'm referring to the Pittsfield plant. It's the only plant that has its own incinerator.

Q What is done at Fort Edwards and Hudson Falls with the filter material.

A Combustible wastes are sent to an outside scavenger who has incineration facilities.

Q And noncombustible wastes?

A They are like scrap capacitors and things like that which can't be burned.

These are disposed of in an appropriately operated landfill, an approved landfill.

Q Are the PCB's heated or vacuum treated to demoisturize them before putting them into the capacitors and transformers?

A I don't know.

First, for the transformers, I don't know.

In the capacitors, the operation of filling is at a higher temperature than it is in the case of transformers, but I do not know that it is a separate heating operation.

Q Has any measurement been made of the evaporative losses of PCB's during this process?

A I've been told by the plant people that they have had measurements made of the concentrations of PCB vapors in

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the work area, and it is my understanding that these are below the threshold limit values established under the Occupational Safety and Health Act.

Q Is water employed for equipment or floor cleaning in the Hudson Falls or Fort Edwards plants?

A Water employed for floor cleaning?

Q Floor cleaning, and for equipment cleaning. You know, when they talked about capacitor wash --

A Oh, cleaning. No. If there are any spills, for example, that occur on the floor, they are -- this commercial absorbent material is put over them and that is then swept up and sent out for incineration. It is not washed.

Q If there is no spill, is the floor washed under ordinary circumstances?

A No.

Q The floor is never washed?

A Never.

(Shaking head negatively.)

Q Do the workers wear any type of protective clothing?

A We have seen no need for that. The usual protective clothing that an employee in manufacturing may wear; coveralls, and things of that sort. But nothing that's specifically designed as protection for the particular material they're handling.

Q What is the volume of effluent discharge from the

dr - 5

combined Hudson Falls and Fort Edwards outfalls?

A Approximately 2.6 million gallons per day.

Q Can you break that down as to --

A Approximately half a million gallons per day from Fort Edwards, 2.1 million gallons per day from Hudson Falls.

Q Have you monitored the various waste streams within the plant to see which one contained and which ones did not contain PCB's?

A Well, we don't really have waste streams in the plant, in the sense that, with the one exception of this final rinse in the washing operation at Fort Edward, there is no process water used in the manufacture of capacitors or transformers.

Q But there are other process waters used, are there not?

A The bulk of the water is essentially for noncontact cooling.

Q Has the noncontact cooling water been monitored for PCB levels?

A As I say, these discharges that we speak of, where we analyze grab samples, the bulk of that water is of a cooling water nature, and we find PCB's in them.

Q But that's after it has been mixed with the capacitor wash or capacitor rinse water, is it not?

A No, I'm talking here -- let's say the case of the

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permit composed for the Fort Edward-Hudson Falls, there are altogether four separately defined outfalls.

One of these is the outfall to which the rinse water is directed. Of the other three, only one has been shown on analysis to contain PCB's, and that's the one which has this approximately 2.1 million gallons per day.-- no, there are 2 at Hudson Falls and 2 at Fort Edwards -- 3 at Hudson Falls which have the 2.1 million gallons per day. But only one of those has been found to contain PCB's on analysis.

Q Now that one which does contain PCB's, have you gone back up the pipe, as it were, to find out where the PCB's enter the stream?

A We have attempted to -- we have assumed that because there is no process water used in contact with PCB's at Hudson Falls, that these represent a combination of residuals and of adventitious losses from what is essentially an anhydrous process, and our approach has been to seek out all the possible avenues by which PCB's might get into this non-contact water, and block those off.

We have also looked to see whether any possible sources of some of the residuals -- we have found some areas that we suspect, and are taking remedial steps with those.

But it is not an easy job just to go back up the pipeline which has been fed by many different sources of non-

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contact water.

Q Well, is it your opinion that the major part of the 20 pounds from Fort Edwards comes from the rinse water, the capacitor rinse water?

A We believe, sir, that is the major contributor to that one outfall that contains the PCB's.

Q Have you been able, similarly, to identify a major source or major sources of the 10 pounds per day from Hudson Falls?

A That is much more of a problem of conjecture, because, as I said, there is no point in the process, as there is at Fort Edward, where we consciously bring water into contact with PCB's.

And therefore, as I say, rather than try to go around and identify a particular source, we've gone the other way and said, let's try to close up all possible avenues by which PCB's can escape from a process which is essentially anhydrous and get into a stream of water which had never contained them, because it is never used in processing PCB equipment.

Q Now, in the Pittsfield plant, is any of the 1.86 million gallons a day that you've identified as your daily discharge employed in the manufacturing operation directly associated with PCB's?

A No. And that, by the way, is divided between two

ar-8

distinct outfalls. That's the sum of those two. There are seven outfalls that appear on our permit application. Only two of them have been identified as containing PCB's, and the sum total of those two is 1.86.

Q And I would ask the same question here as with respect to Fort Edwards and Hudson Falls: has an attempt -- this is a very large amount of water. 1.86 million gallons per day. Has an attempt been made to analyze the various streams that make up that, to see which ones do and which ones do not contain PCB's?

A There are so many -- let me back off and give you some perspective here on this one, too.

The Pittsfield plant is about 72 years old. When it was being built up over the years since it was first opened, every time a new building would be put up they would run a drain line across the shortest distance between that building and the river.

The result was a multitude of more than 30 discharges into the river.

When -- and I can't give you the exact date -- but when that plant, which is progressive and looking at its environmental problems, set up a specific environmental protection operation as part of the facility's operation there, the manager of that set about in a systematic program to consolidate those streams, so that we have now reduced

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that down to seven by putting in crosspiping, and so on.

And it would therefore be virtually impossible at this stage, without digging up the whole thing and going underground, to try to pinpoint from which of the myriad of pipes under that plant a particular amount of PCB is coming.

Remember, we're talking about only on the average a tenth of a pound total.

Q You have testified that accumulations of PCB's would result in continued discharge, even if the plants were to completely eliminate PCB's from their current operations.

What percentage of the discharge could be eliminated if PCB's were to be eliminated at Pittsfield?

A If I refer back to these 45 samplings from each of the two discharges over the year 1973, I said the average was about a tenth of a pound per day of 1254, and about .08 pounds of 1260.

We're assuming that 1260 is a representative of the residuals not of current production and the one-tenth pound per day average is what represents the losses from current production. That's not a completely strict division, since there have been improvements in the containment process since the date in 1972 when we switched over completely to 1254. So there may be a small amount of 1254 in the residual, but basically 1260 is the residual, 1254 is the current production.

'x-10

Q Have you or has anyone under contract to G-E conducted treatability studies for a waste treatment system to remove PCB's?

A We have approached the proble[illegible] the ground that the major priority should be the control of current production, and basically all of our environmental control efforts have been directed towards that.

We have been encouraged in that approach by report memoranda, conversations, with EPA officials during the past few years indicating that EPA's major concern was the control of current losses.

They recognized that over forty years of use, there are going to be lots of PCB's -- quite ubiquitous, to use the terminology of the interdepartmental task force -- and that the compelling need was to control the current production. So we have put virtually all of our effort into that, as the desired direction over which we could have some real control and immediate impact.

Q You've referred several times to sampling problems associated with PCB's.

Could you elaborate on why there are problems associated with sampling PCB's?

A These can arise from several sources. Well, I'm speaking here from information given by our plant people, because I have not been directly involved in the sampling.

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Let me mention some of these.

Sampling is generally done through a manhole that presents you with access to the pipe through which the liquid is flowing. We may specify a certain number of gallons a day going through that, but remember, this is not a uniform flow. It isn't always flowing at a constant rate every minute of the day.

And secondly, this is water which is noncontact cooling water which is going through old pipes and may also contain some runoff. So it is not necessarily a clean water, in the sense of being completely free of suspended material, not material that is readily removable by filtration; I'm talking about very fine particles -- which nonetheless can adsorb PCB's,and the difference in the analysis could come from the amount of this material that may come into the grab sample. These are, as I say, grab samples. It's not a continuous sampling of a nice uniform process stream which fills the pipe to a given depth all the time.

But these are the kind of factors that lead to the wide variability in sampling, as I have been told.

Q Well, now, let's take specifically: the flow is not constant.

But over a long series of measurements, wouldn't that tend to average out?

A We are talking here about taking a sample, one

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grab sample a week. Now, I don't know that those samples are taken at precisely the same hour on the same day of the week, and even if they were, I don't know that one would then still guarantee that that flow would be the same.

But as I say, yes, you say these average out. We are reporting an average of 1/10th of a pound per day, but an excursion can go as high -- the highest value based on those 90 measurements gave us a calculated 0.8.

Q Are PCB's adsorbed in water?

A Yes.

Q So, wouldn't it be possible that they would tend to settle in a stream or in a waste effluent? That is, they would tend to ride down so that a sample taken from the top might contain less PCB's, might it not, than a sample taken at the bottom?

A There are undoubtedly differences in the depth from which you measure this. Part of the problem that we face in these residuals probably arises precisely from that effect, that the pipes, through which uncontrolled effluents have been going in years past, do contain on their walls deposits of PCB's laid down in the fashion you speak of.

Q Do you know what the solubility of Aroclor 1016 is?

A Not offhand. The most recent value I've seen was for 1254, and I believe that some of the other -- the Aroclo

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is, as I recall, on the order of 100 to 200 parts per billion. That's the water solubility.

Q So the concentrations that you've measured in the effluent, which, as I understand your testimony, were 350 and 4,000 parts per billion for the Hudson Falls and Fort Edwards facilities, respectively, are actually well above the limit of solubility, aren't they?

A That is correct. We are getting this phenomenon that you mentioned.

Some of these are heavier, they get swirled around, and sometimes you find a sample that has a sort of insoluble coagulated PCB.

End 2E.

Q Now you referred to, as I recall, about 30 pipes discharging into seven outfalls at the Pittsfield plant: is that right?

A A consolidation of individual discharges into a controllable number. I may have the actual number. I know seven are reported now. I don't know the number historically, but it was considerably larger.

Q Now wouldn't it be possible to isolate the -- let me ask it a different way:

Of two pipes which do contain PCBs, two discharges, aren't those two pipes themselves consolidated discharges? Don't they lead back to other pipes which branch back?

A Lead back in which direction, toward the plant or toward the river?

Q Toward the plant?

A Yes, they represent the consolidated output of a large network of pipes that are decades old running under buildings that they don't even service. It's a whole maze of drainage systems from in-plant and surface drainage and so forth, and to get this whole system under control the facilities people said, "Look, we can't just have an uncontrolled number of a couple of dozen discharges. We've got to consolidate this." Because what we have done, you see, is -- Let me tell you some of the reasons why this was done to indicate that we are not -- this was not to make things -- just to hide things and

say we don't know about them, because we only have seven instead of 37.

I mentioned that Pyranol is a relatively small fraction of the total operations at Pittsfield. Even transformers are not the only things we make at Pittsfield. And the most ubiquitous material is oil, lubricating oils, and cutting oils and so forth, and the environmental people at Pittsfield showed a commendable initiative and technical resourcefulness in developing a relatively simple but effective oil-water separator.

This oil-water separator, just parenthetically, the developers of this received a reward from the National Society of Professional Engineers as one of the ten outstanding engineering achievements in 1972. So it's a good piece of engineering work.

We have installed four of these at outfalls in Pittsfield from which major oil contamination of the river can occur.

One of the reasons for consolidating all of these drains was so that we could funnel all the water, surface runoff, cooling water, everything else, through these, so all of the water that could possibly be contaminated by oil is run through these oil water separators before it is discharged to the Housatonic River, so this consolidation was done to control that kind of ubiquitous contamination which is much,

much larger in terms of quantity than the PCBs.

Q Let me see if I understand you correctly.

When the pipes are run together into the separator, you must be able to identify which pipes go where and is it my understanding -- is my understanding correct that you have not gone back up to these pipes to measure the PCB levels in each?

A You have to visualize, Mr. Eckert, the way this is. You have had a whole network of pipes all underground. These are drainage pipes; they're not -- all the pipes by which Pyranol or PCBs are transported around the plant are now above ground, so that any leaks that occur are immediately detectable and repairable, but these are drainage pipes for cooling waste water, for storm runoff, for everything that we don't need anymore, and these are all underground.

Now, what was done some years back-- And this predate the concern for PCBs as an environmental contaminant. What was done was to say, Look, we had all these outfalls going to the river. So they were clearly identified. What they did was to dig up and put connectors there and send them all to consolidated outfalls and then bury the whole thing again because this is all underground.

Now we see nothing to be gained by digging all that up and putting individual sample stations on all these, because we would not even know where these originated from

in the plant. Remember, this is just down where they would terminate at the river we have consolidated them into a common manifold. But even identifying those individual pipes would not identify the sources. We know where the current production is located and our philosophy has been, "Let's stop losses to the best of our ability from those." Anything else that gets in could come from anyplace in the plant, because for 70 years we've moved around production underground facilities and everything else and nobody has detailed records of where everything is in all 70 years of operation.

Do you know, you have referred to an incinerator, and the only incinerator GE operates is at Pittsfield; is that correct?

A The only incinerator that is capable of destroying PCBs, yes.

Q Yes.

Now, have the emissions from the stack of that incinerator been monitored to determine precisely what they contain?

A The emissions from this incinerator have been tested. They are acceptable both to the state and to the EPA. Indeed, we are now just concluding negotiations for a program that was initiated by Region One, headquartered in Boston.

They have come and inspected our incinerator

facility. They are satisfied that it is an environmentally compatible way of destroying PCBs without adding air pollutants. And they've said:"Look, we havein Hingham, Massachusetts I don't know how many pounds or tons of DDT that has been pulled off the market as a result of EPA's ban on DDT, and we want to get rid of that, and we are convinced that your incinerator provides an environmentally sound way of doing that."

It was just last week that representatives from Region One and from the state visited our Pittsfield plant for the final negotiations. We have agreed to accept on a test basis a certain number of pounds and we will carry out that incineration; if it is satisfactory, we will destroy more.

So they are convinced, too, that this is a sound way of disposing of DDT without providing environmental contamination.

Q Well as I recall, my question was as to the levels that were measured in the emissions.

A I don't have any data on that specifically. I've been told by the plant people that the emissions do meet the requirements and I am also inclined to believe that when I see that EPA has come and said, "Look --" we did not go out to solicit this business; we're not in the business of incinerating DDT. We have been asked specifically by EPA to perform this as a service for them.

In fact, I believe in my testimony I quote from the

initial visit on page 3, in which Dennis Huebner, the Chief of the Solid Waste Program for EPA Region One, sent an unsolicited letter indicating his approval of the process: "The great strides forward in solving the processing of disposal problems of PCB. I'm very pleased with your willingness to assist Massachusetts in solving some of their hazardous waste disposal problems, particularly the DDT stored in Hingham, Massachusetts.

We did not ask for that letter.

Q On page 10 of your testimony, you refer to the rapid metabolism of the lower chlorinated homologs and you give a quotation and a Reference 19.

In my copy of the testimony, there is no Reference 19. I wonder if you could tell me what the reference is that you intended to cite there.

A That's what happens when documents are put together against a deadline.

I'm afraid I can't answer unequivocally now. I would have to go back and look at my earlier draft and see that, so I cannot answer that at this sitting. It was obviously a direct quotation and it was from some published paper, but without going back to the original draft. I could not identify it here.

Q Has GE done any work to determine the biodegradability of PCBs?

A No.

mea-7

Q Has GE done any independent work to determine whether or not PCBs are metabolized?

A We have relied entirely on the data which others have published and, upon reading it, we have found that it seemed to be data which were properly obtained and reported and we have relied on the scientific ability and integrity of those who have reported it. We have not done any independent work of our own.

Q If all of the PCBs which were discharged from the two plants on the Hudson River were mixed with Hudson River water, have you calculated what the concentration in the Hudson River would be after such mixing?

A I have not. I have done it for the Housatonic River, because there we had actual measurements and these calculations and measurements were -- I mentioned we had one at three parts per billion; that's what the calculations would have indicated. Since we didn't have any measurement of the Hudson, I didn't have the same immediate incentive to do the calculation. I don't know whether Dr. Pozefsky may have done that, but I have not. It can be done, based on the 1600 cfs as the flow rate.

Q Thank you, very much.

MR. ECKERT: I don't have any further questions.

MR. RICHEL: I have just a few questions.

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REDIRECT EXAMINATION

BY MR. RICHEL:

Q A while back, you referred to certain initial limitations for the Hudson Falls facility. I take it those limitations were not the proposed final limitations as well?

A These were not. These were for an initial period as defined in the permit.

Q And the final limitations proposed were?

A Zero discharge.

Q A while back you also referred to -- what was the duration of the permit? Do you recall offhand?

A The initial limitations were for a period of 21 months following which the condition was changed to zero discharge for chlorinated hydrocarbons.

Q And the duration of the permit entirely was five years?

A I would have to check that point.

Yes. The initial period was 21 months, the total five years, yes.

Q Now you also referred at one point a while ago to the concept of zero containment. I just want to make sure there that it reads properly.

Am I correct in assuming that zero containment is the equivalent of a hundred percent containment?

A Thank you for correcting that. I mean containment

from which the losses are directed as low as possible toward zero.

Q Just one other point.

Mr. Eckert touched upon the company's manufacture of transformers for railroad applications. Where is that done?

A Pittsfield.

Q Is it also done at Erie?

A Erie manufactures the cars and they purchase transformers from Pittsfield and install them on the cars that they manufacture at Erie.

Q And has Erie received any inquiries from representatives of operating railroads and representatives of the Department of Transportation and the Department of Commerce concerning the application of this proposed standard?

A The Department of Transportation and the Department of Commerce and major railroads, particularly in the Northeast, have expressed great concern over the continued availability of PCB-filled transformers for mass transit operation.

Q Very simply, without a long dissertation, what's the problem?

A With them getting it? Or why they use it?

Q What's the problem if they can't get it any further?

A Flammability. These are mounted underneath the cars on which passengers ride. If there should be any malfunction of the transformer or any rupture of the transformer,

allowing liquid to leave it, as through an accident, if that liquid is oil there is immediately a fire hazard endangering the safety of lives of the passengers.

Q To your knowledge, has this problem been considered by EPA?

A I've seen no evidence that EPA has considered this.

MR. RICHEL: I don't have any other questions.

XXXXX

RECROSS EXAMINATION

BY MR. ECKERT:

Q Does GE intend to attain zero discharge at the two plants on the Hudson River?

A Zero discharge as it appears in the Federal Water Pollution Control Act is a national goal. And --

Q Well, I'm referring to the proposed permit condition which Mr. Richel questioned you about.

A Oh. We have filed a formal objection on grounds that I'm sure Mr. Richel, who wrote the letter, could explain in more legal terms than I. Whom of us do you wish to answer that, because we feel there was an improper imposition of a condition in the permit which was not justified either in terms of timing, or certainly even in terms of the proposed regulations? The proposed regulations would not set zero discharge into a river flowing at 1600 cubic feet per second.

MR. RICHEL: Let me just say that in this instance, as with one other recent instance, we felt regional

EPAs were attempting to prematurely impose toxic pollutant standards for the sake of administrative convenience. That principle was acknowledged by Region Four recently, and we're hoping that that same principle will be acknowledged by Region Two; and therefore will not impose zero discharge limitation as being representative of best practicable technology.

BY MR. ECKERT:

Q Are there alternative dielectrics for PCBs in transformers for railroad use?

A The use of PCBs in transformers is dictated exclusively by the safety factor that it imparts to the equipment. From an electrical point of view, mineral oil would do just as well. It would be cheaper for us and for the customer. It would provide a transformer that was lighter in weight. It would provide a transformer which would not require some of the special insulation that is required inside of PCB-filled transformers.

There has therefore been ever since we got into this business all of the traditional economic incentives for us to find a substitute material. And over the last 30 years, more than a hundred possible substitutes for PCBs have been looked at in the laboratory for use in transformers.

That effort has been accelerated within the past year, since the first indication that these regulations might

appear as stringent as they have been published. And to date we see nothing that would combine the electrical and safety characteristics of PCBs.

Q Thank you, Dr. Simons.

MR. ECKERT: I don't have any further questions.

JUDGE SWEENEY: You're excused, sir.

(Witness excused.)

JUDGE SWEENEY: We'll take a 15-minute recess.

End 3A (Recess.)